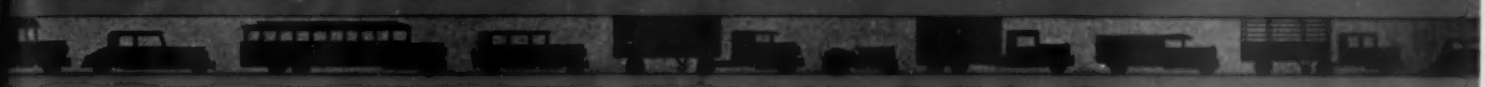
JULY
1934

FLEET OWNER

THE FERGUSON PUBLISHING CO., 50 WEST ST., NEW YORK, N.Y.

Devoted to the Better Operation and Maintenance of Truck, Bus, Taxicab, Passenger Car and All Automotive Fleets



FEATURE ARTICLES:

Selection of Automotive Equipment
By Clinton Brettell

Better Design Would Reduce Costs
By F. L. Faulkner

Uses Winter Oils for Summer Operation
(An Experience Story)

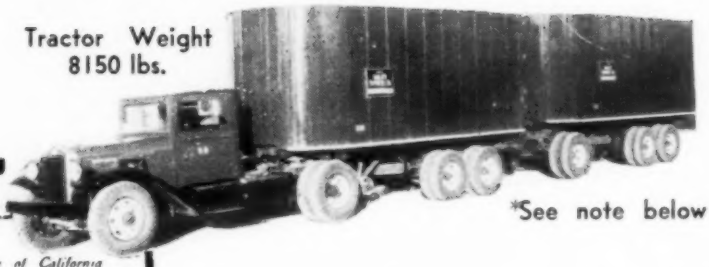
Three Studies on Bus Performance
By Three Operators

Truck Tire Load Specifications
By W. C. Bray

DEPARTMENTS:

Trouble Shooters' Forum
As We Go to Press (News)
John Law Sez: (Court Decisions)
New Products for Road and Shop
Question-of-the-Month Club

"...excellent performance..."



Tractor Weight 8150 lbs.

*See note below

Operating Under the Jurisdiction of the Railroad Commission of the State of California

VALLEY EXPRESS CO — DAILY SERVICE

Over-Night Service to All Points

April 4, 1934

Mr. C. L. Cummins,
Cummins Engine Company,
Columbus, Indiana.

Dear Sir:

We have been using engines of your manufacture in our fleet since 1932 and at the present time have fifteen Diesels in service, some in new equipment and some in rebuilt chassis.

We are pleased to report remarkable success with them both from a performance standpoint and in the matter of economy.

When we consider the excellent performance of the engine and the great saving to be made in fuel cost, we feel sure that we shall eventually dieselize our entire fleet and are pleased to assure you of our continued patronage.

Very truly yours,

VALLEY EXPRESS CO.

by H Jacobs
General Manager

FB:Mo.

...and great saving in fuel cost..."

says the Valley Express Company with reference to the fifteen Cummins Diesel Engines in use by them and which have run a total of

750,000 MILES

Scores of other fleet owners are equally enthusiastic over the results obtained with their Cummins Diesel Engines. These engines have proved their superiority for economy, safety, reliability and power under *all conditions. They are no longer an experiment.* Many truck manufacturers have adopted Cummins Diesel Engines and regularly build Diesel Truck Chassis.

If you are seeking ways and means for reducing your operating costs, write for our booklet describing the phenomenal results being obtained by many fleet owners with Cummins Engines. In writing, please give us a list of your present equipment in operation.

CUMMINS ENGINE COMPANY
Columbus, Indiana

*NOTE.—This combined unit handles a 20 to 22-ton payload and operates between Fresno and San Francisco, a distance of 200 miles one way, making a round trip each 24 hours.

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Fleet Equipment Manufacturing Co.,
7510 Washington Avenue,
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Fresno Motor Sales,
1333 Van Ness Avenue,
Fresno, California.

Gordon Motor Parts, Inc.,
30 Joseph Avenue,
Rochester, New York.

Mid-Continent Supply Company,
Holmes Building,
Fort Worth, Texas.

Mid-Continent Supply Company,
Houston, Texas.

Mid-Continent Supply Company,
Philtower Building,
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The von Hamm-Young Co., Ltd.
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San Francisco, California.

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CLINTONVILLE, WISCONSIN

KENWORTH MOTOR TRUCK CORPORATION,
SEATTLE, WASHINGTON

KLEIBER MOTOR COMPANY,
SAN FRANCISCO, CALIFORNIA

LINN MANUFACTURING CORPORATION,
MORRIS, NEW YORK

ROBT. GOTFREDSON TRUCK COMPANY
DETROIT, MICHIGAN

STERLING MOTOR TRUCK COMPANY,
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INDIANA DIVISION, THE WHITE COMPANY,
CLEVELAND, OHIO

CUMMINS ENGINE CO.,
COLUMBUS, IND.

Please send me a copy of your free booklet describing the principles of the Cummins Diesels. As requested I enclose a list of our present equipment.

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CITY .....

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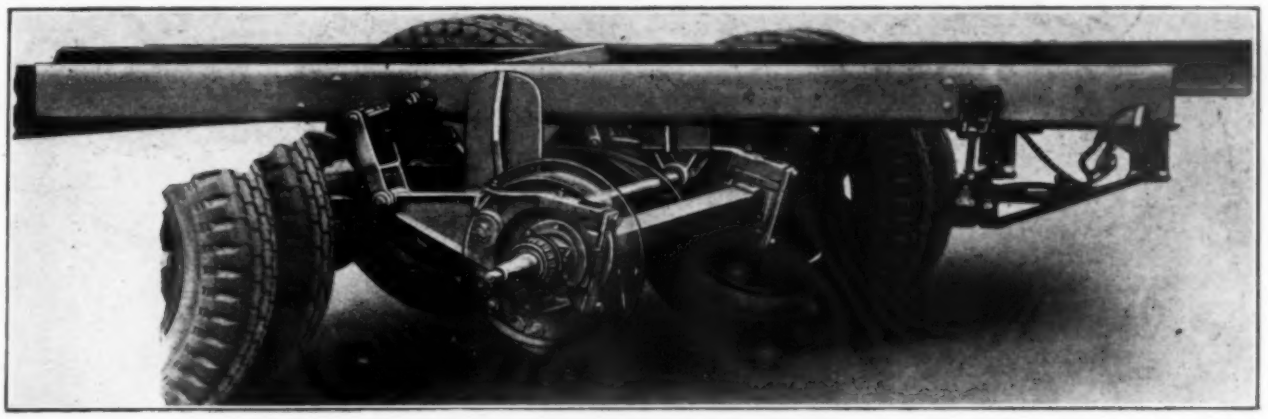
UTILITY was FIRST in the UNITED STATES to INVENT, PERFECT and MARKET SIX-WHEEL ATTACHMENTS.

Made for 4-Wheel Trucks of all makes and capacities.



Model 15 Installed on Ford

Model 15 for FORD and CHEVROLET trucks

UTILITY SIX WHEEL ATTACHMENTS are available for prompt installation in all principal cities. Get prices and discounts from nearest distributor.

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Council Bluffs.....Omaha Standard Body Corp'n., 2411 West Broadway
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Fresno...Utility Trailer Sales Company, 503 Broadway
Honolulu Schuman Carriage Company, Box No. 2281
Indianapolis..Indiana Wheel & Rim Co., 34 W. North St.
Kansas City National Steel Products Co., 1611 Crystal Ave.
Los Angeles Utility Trailer Sales Co., 1600 S. San Pedro St.
New York City..Metropolitan Truck Equipment Corp'n. Long Island City, Third St. & West Ave.
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San Francisco..Utility Trailer Sales Co., 1242 Mission St.
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Box 1407 Arcade Annex Los Angeles, California

10 Years' experience in Six Wheel Attachment Manufacturing

Has all proven Utility features of which these are unique, exclusive and vital—

1. **Truck frame supported at four points under load.**
2. **Drive wheel traction increased when accelerating.**
3. **Brake reaction equalized.**
4. **Maximum flexibility and simplicity.**
5. **No change in truck parts to install attachment.**

Write for our special folders giving full description of Utility Six Wheel Attachments for FORD and CHEVROLET Trucks.

Model 15 Installed on Chevrolet

Your driver halts a RHINO on a rampage at every stop signal

WHEN YOU VISUALIZE . . . YOU REALIZE THE IMPORTANCE OF USING

Thermoid

HEAVY DUTY BRAKE BLOCKS

Jungle inhabitants know better than to linger long in the path of a charging rhinoceros. Here is a quarrelsome quadruped with the speed to *go places* and the strength to *do things* in a big way. Yet . . . with *his foot pedal* your driver *must control* a mechanical beast that can easily outdistance or *outdamage* the bulkiest rhino that ever made a native run for his life.

Translate the stopping of a motor vehicle into terms of what such an accomplishment actually represents. Then you'll appreciate the importance of Thermoid Heavy Duty Brake Blocks. Thermoid gives immediate soft-pedal action and maintains it throughout life. Thermoid won't fade out . . . won't grab in damp weather . . . won't score brake drums. It is road conditioned in the factory.

When you *visualize* you realize that Thermoid is the braking material for your drivers to *use* . . . the braking material for you to specify.

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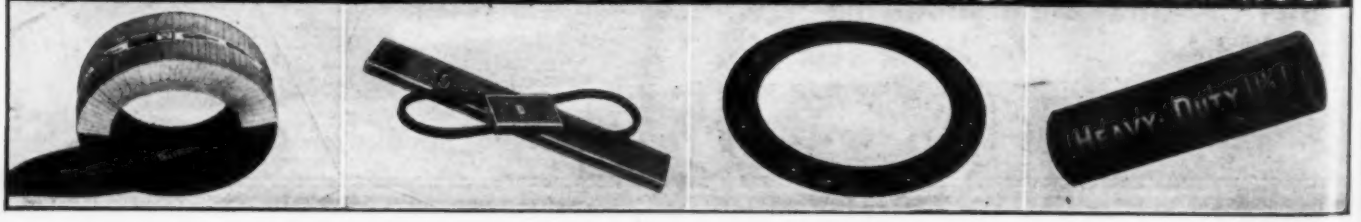
Department—F
Factories and Main Offices TRENTON, NEW JERSEY

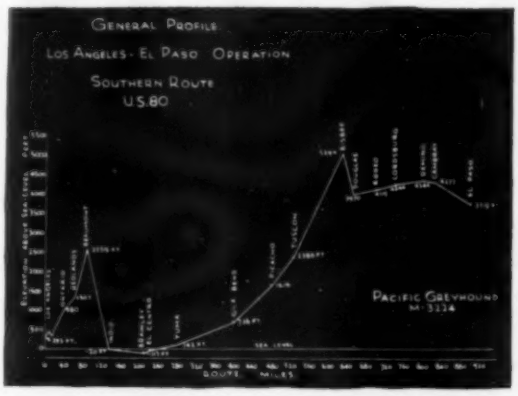
HEAVY DUTY F-M-L BRAKE LINING | HEAVY DUTY FAN BELTS | HEAVY DUTY CLUTCH FACINGS | HEAVY DUTY RADIATOR HOSE



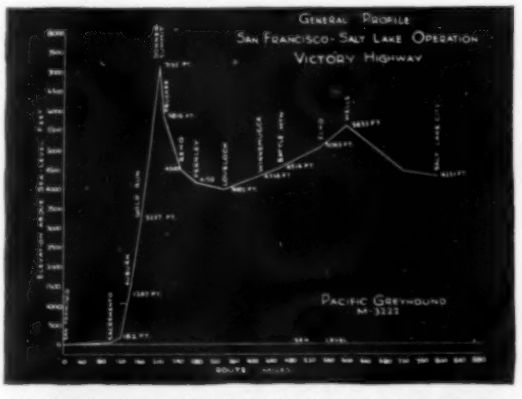
Say "I saw it in FLEET OWNER"—It Helps!

PACIFIC GREYHOUND LINES

Secures Lowest Spark Plug Cost in History with CHAMPIONS



Note extreme grades and altitude conditions from below sea level to 5,294 feet above. No. 13 Champions handle these extreme conditions perfectly, whereas previously on this route buses frequently returned from El Paso with a different set of plugs than those with which they left Los Angeles



Note how bus has to climb 7,135 feet in clearing Sierra Nevada Mountains in about 90 to 100 miles. Plugs have to stand maximum heat in this climb and on return trip down grade against compression, maximum fouling dangers. One type plug handles this service like a true Champion

Pacific Greyhound Nite-Coach seats 40 passengers, and sleeps 25. Each compartment is equipped with radio. Carries porter, has well equipped lavatories. Hall-Scott engine in rear equipped with No. 13 Champions

The Pacific Greyhound Lines unquestionably operate over the most diversified topographical route in the country. Climatic and altitude conditions run the whole gamut of the barometer. Schedules must be kept. Economy and dependability are the watchwords of the service that has made Pacific Greyhound famous.

Operating 289 large buses of various types, including the famous "nite-coaches," an average of over 1,500,000 bus miles a month is piled up. Champion Extra Range Spark Plugs are used in all of Pacific Greyhound operations and have been for over five consecutive years. From a maintenance standpoint the most significant phase of this operation is the fact that only 2 seven-eighths and 2 metric type Champions are required to meet every need for maximum performance and minimum cost.

The graphs, at the left, showing the terrain on two major routes, clearly illustrate the ability of Champions to handle the great heat developed when the buses climb the tortuous grades, and in meeting fouling conditions when these same buses are going down the long grades under compression.

For maximum performance, dependability and economy with minimum types and service, use the spark plugs champions use — Champions.

USE THE SPARK PLUGS CHAMPIONS USE

See Champion Spark Plugs made from the raw sillimanite ore through processing, forming of insulators, assembling and testing, in the great Ford Motor Company exhibit at the Century of Progress.

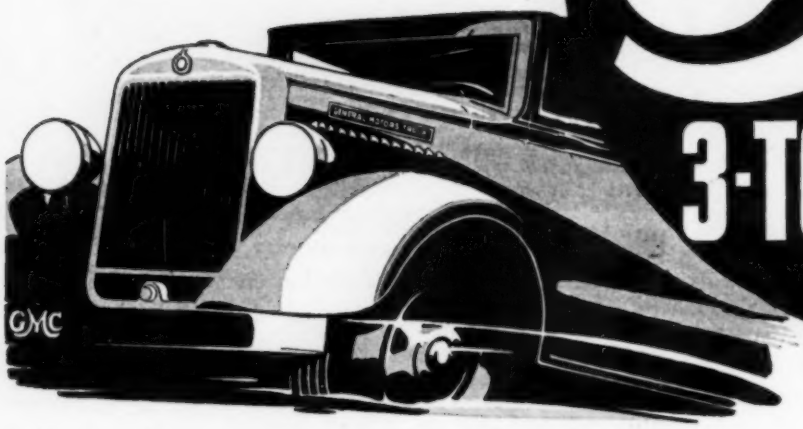
CHAMPION

EXTRA-RANGE SPARK PLUGS

Say "I saw it in FLEET OWNER"—It Helps!

TRUCK NEWS!

A NEW GMC 3-TON TRUCK



An Outstanding Value

Any 3-ton truck priced at only $925 would ordinarily be considered a real value. But here is a 3-ton truck bearing the GMC name, a truck with every feature that insures truck-built performance, economy and dependability—and priced at only $925. Such a truck value is truly outstanding.

Listed at the right are a few of the many modern improvements found in this newest addition to the GMC line. They combine to produce not only a unit of unusual ability in its capacity range, but also a unit fully comparable with many so-called heavier duty trucks. *Write for details today.*

$925 CHASSIS F.O.B. PONTIAC

Gross Rating—12,500 Lbs.

Payload Capacity—2½-3½ Tons

Wheelbases—142"—166"—184"

GMC Valve-in-Head Engine
69 H.P. 155 Ft. Lbs. Torque

Frame 8" Deep

Centrifuse Brake Drums

Needle-Bearing Universal Joints

Maximum Tire Size
8.25 20 10-ply Duals

Full Floating Rear Axle

GENERAL MOTORS TRUCKS AND TRAILERS
GENERAL MOTORS TRUCK COMPANY PONTIAC, MICHIGAN
Time Payments Available Through Our Own Y. M. A. C.

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The

FLEET OWNER

Published Monthly in the interests of Automotive Fleet Owners who maintain their own Repair and Service Shops and devoted to the better Operation and Maintenance of Truck, Trailer, Bus, Passenger Car, Taxicab and all Automotive Fleets.

VOL. 13 New York, July, 1934 No. 1

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DUAL GOVERNORS

In addition to Governors for all single venturi carburetors, having 1", 1¼, 1½", 1¾" and 2" S.A.E. flanges, the Hoof and A.C.H. Governor line covers all necessary Dual types for double venturi or "duplex" carburetors. There are the S-1-D-2 and H-1-D-2 for Ford V-8, Oldsmobile 8 and Auburn 8. The S-1-D-3 and H-1-D-3 for Mack Trucks and Lycoming Engines. The S-1-D-4 and H-1-D-4 for Pierce-Arrow, Studebaker, Marmon, Hupmobile and Nash. And the S-1-D-5 and H-1-D-5 fits Reo Trucks, Franklin 12 and many others.

Remember that Hoof and A.C.H. Governors comprise a complete line, including types especially adapted to Chevrolet Vacuum Spark Control and Carter B & B Carburetors (with Vacuum step-up pistons)—all correctly engineered for the job.

Specify Hoof or A.C.H. Governors for your next requirements. They are handled by leading distributors everywhere.

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166 No. Franklin St. Chicago Ill.

The Hoof Products Co. own Patent No. 1,726,725 and are exclusive licensees under patents granted and patents pending, covering Key-Control, Cantilever Spring and Automatic Spark Advance principles used in the Hoof Governor.

One half turn of key changes speed 2½ miles. Removing key locks Governor.

HOOF and A.C.H.

(KEY TYPE) (SEAL TYPE)

GOVERNORS

With Patented Hoof Cantilever Spring

Mfd. by HOOF PRODUCTS CO., CHICAGO, ILL.

adopted as standard on the World's largest fleet

The two leaders

DITZCO ENAMEL

For spraying or brushing, where both fine appearance and low cost are essential. High natural luster, great covering capacity, fast drying, wide range of beautiful colors of exceptional depth. A tough, long-lived finish that resists the storm and sunshine.

DITZCO ENAMEL QUICK SET

A perfect spraying, fast-drying enamel, with maximum spreading qualities. Dries dust-free in 15 to 30 minutes. Ideal for the low cost, one-coat jobs where speed is essential. High luster, weather resistant. Assures more miles between refinishing jobs.

Two leaders in the Ditzler line that help the fleet owner lower his maintenance costs. Speed of application and fast drying reduce the time in the paint shop. Ditzler quality maintains finer appearance, assures "more miles to the gallon" of finish.

Available through the Ditzler Nation-Wide Jobbing System

DITZLER COLOR COMPANY, 8000 W. CHICAGO BLVD., DETROIT, MICH.

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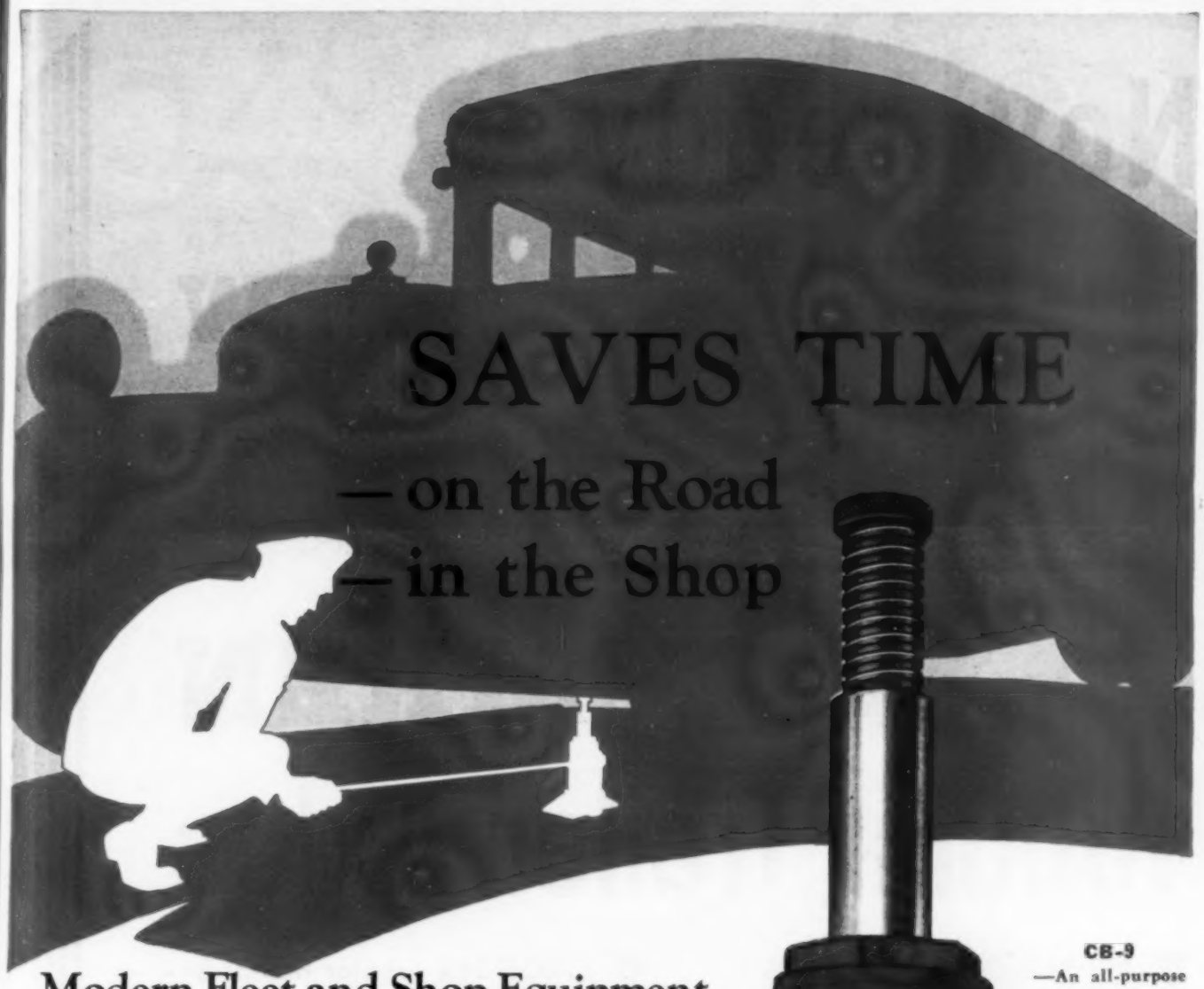

Modern Fleet and Shop Equipment Calls for Hydraulic Jacks

EVERY bus needs a Blackhawk Hydraulic, for tires still puncture—and schedules must be maintained. The shop needs several Blackhawks, because they save time and labor on a lot of jobs.

Here is tremendous power in compact units, adapted to a wide range of uses, easily controlled, safe, rugged.

Easy strokes raise the load or apply the pressure—and the turn of a valve releases it smoothly and safely. With simple fixtures, a Blackhawk Hydraulic Jack can handle dozens of bending, twisting and pressing jobs, and still be available for routine jacking work. The handiest helper a shop can have.

Ask your Jobber Salesman about the full line of Blackhawk Hydraulics—1 to 75 tons. Write us for free literature.

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MILWAUKEE WISCONSIN

CB-9
—An all-purpose seven-tonner

BLACKHAWK HYDRAULIC JACKS

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Send literature on your Hydraulic Hand Jacks, capacity .....tons.

Name .....
Shop Address .....
Preferred Jobber .....

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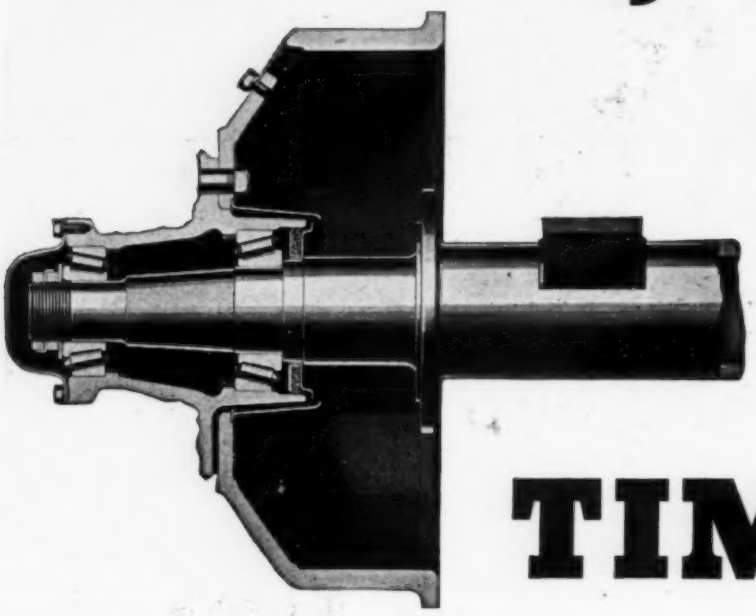
Now ready▼▼



A NEW Series of TIMKEN

Tubular Trailer Axles

- ▼ All-steel INTEGRAL unit
- ▼ TEMPERED STEEL tubular axle beams
- ▼ LARGER SPINDLES of alloy steel
- ▼ MORE STIFFNESS in axle beams due to tubular construction
- ▼ HEAVIER BRAKE DRUMS for more efficient braking
- ▼ STRONGER tubular beams because of "proportionate design" of spindles and tubular beam
- ▼ NEWEST SERIES Timken Tapered Roller Bearings
- ▼ WIDER BEARING SPACING improves stability of wheels

No trailer can be called truly *modern* unless it is built on axles having these *essential* features. . . . The new series Timken Tubular Trailer Axles are the only axles possessing *all* these features.

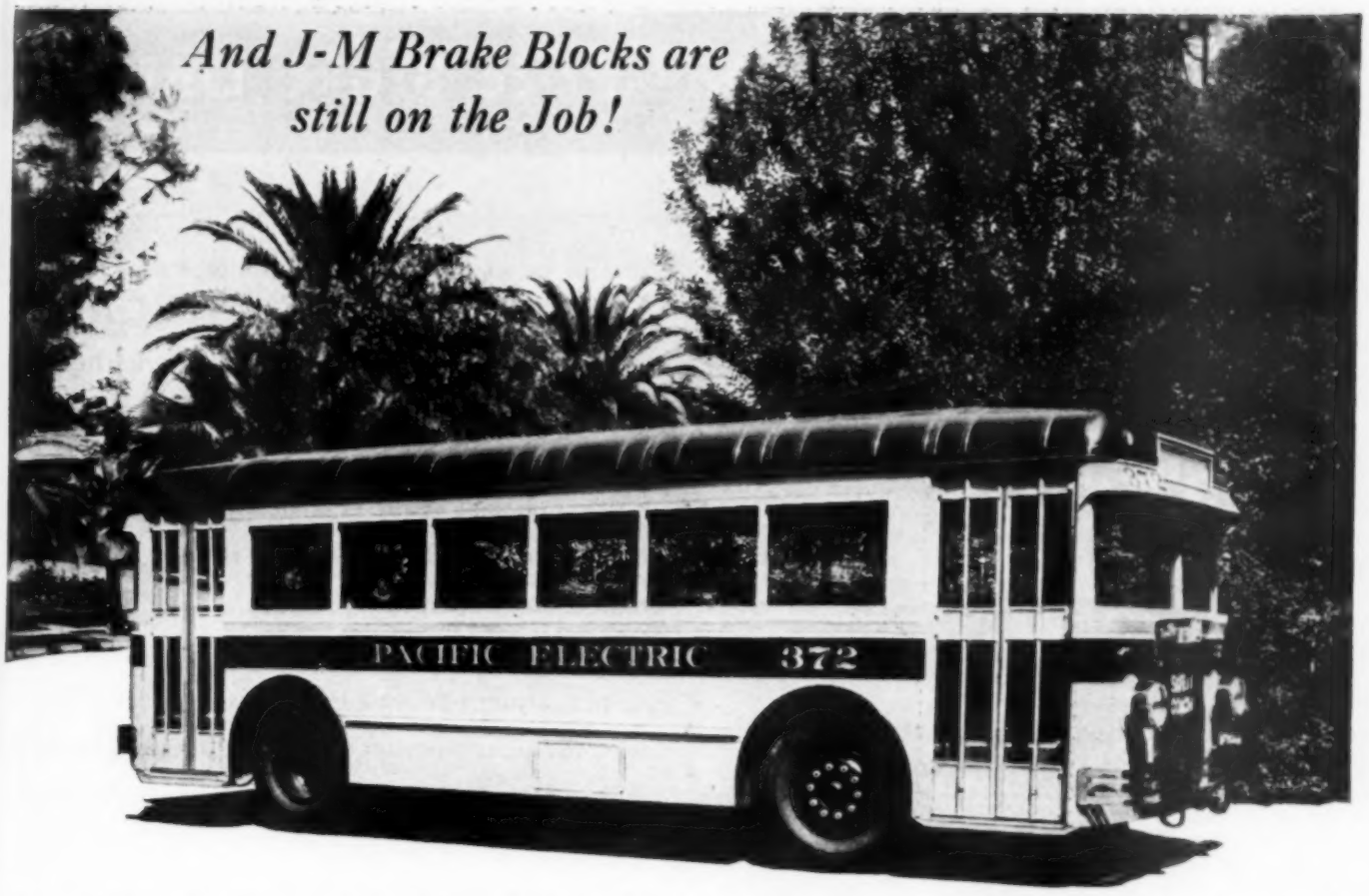
TIMKEN AXLES D A CO

THE TIMKEN-DETROIT AXLE COMPANY
DETROIT, MICHIGAN

"THE ACCEPTED STANDARD"

Say "I saw it in FLEET OWNER"—It Helps!

152,970 Miles



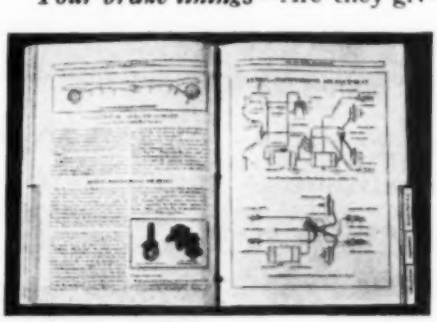
The Pacific Electric Railway's Pasadena fleet of ten 24-passenger Twin Coaches recently completed an average of 152,970 miles on Johns-Manville Brake Blocks. And they are still on the job, apparently good for many miles more.

AN impressive mileage record, we believe you will agree. But the figures by no means tell the whole story.

To appreciate fully the service they're getting from J-M Brake Blocks, you'd have to ride one of their busses on the Pasadena run. And observe brake action as passengers are taken on and discharged, as grades are negotiated, as traffic conditions necessitate sudden stops, frequent brake applications.

Sitting behind the driver, watching closely, you'd find brakes functioning smoothly, safely and dependably at all times, under all conditions.

Your brake linings—Are they giving you too little mileage? Too much trouble? Let us survey your equipment and submit definite brake-lining recommendations. Our brake experts have helped many hundreds of operators to solve their brake problems, materially increase their brake mileage.



No obligation, of course. Merely check and return the coupon.

Brake Reliner's Manual FREE

And whether or not you are ready for a definite brake survey, let us send you a copy of the J-M Brake Reliner's Manual, containing 124 pages of helpful information on relining, adjusting, trouble-shooting. *It's free.* Mail the coupon.

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BRAKE BLOCKS

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☐ Send us a free copy of the J-M Brake Reliner's Manual
☐ You may arrange for a J-M Brake Survey

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Address_____

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FO—7-34

AMERICAN BRAKEBLOK

The One-Quality, One-Price Brake Lining

The Same in Every Form . . . Rolls, Sets or Thick Blocks

AMERICAN *Brakeblok* as a material, differs from other brake linings in a great many ways. The manufacturing and marketing policies of the American Brakeblok Corporation also differ from those of many brake lining manufacturers. For example, AMERICAN *Brakeblok* is made in only one grade—the finest grade. There are no secondary or low-priced lines of AMERICAN *Brakeblok*—either under that name or any other.

The maintenance man is therefore assured of the finest and most economical performance when he installs AMERICAN *Brakeblok*.

Also of great importance is the fact that AMERICAN *Brakeblok* is the same in every form. It gives the same superlative performance whether in Sets, Rolls or Thick Blocks, and on any truck, bus or passenger car.

The material itself is a dense, homogeneous solid, formed under pressure, thoroughly heat-treated and accurately ground to size. The Sets, available for practically any car, are formed to proper drum size and ground to correct thickness, then cut to exact length and chamfered. In addition to Rolls, Car Sets and Axle Groups, AMERICAN *Brakeblok* is available in Keeper-Type and Bolt-On Full-Coverage Brakebloks for heavy-duty service.

AMERICAN *Brakeblok* gives longer service at lower cost per stop, requires less adjustment and invariably reduces brake maintenance expense. Standardize on AMERICAN *Brakeblok* for all your equipment. Write for information on any type of installation in which you may be interested.

AMERICAN BRAKEBLOK CORPORATION
4660 Merritt Avenue, Detroit, Michigan
New York, Cleveland, Chicago, St. Louis, Los Angeles, San Francisco
A Division of **American Brake Shoe and Foundry Company**

AMERICAN BRAKEBLOK
Reg. U.S. Pat. Off.

Say "I saw it in FLEET OWNER"—It Helps!

VOL. 13
NO. 1

The FLEET OWNER

JULY
1934

DEVOTED TO THE BETTER OPERATION AND MAINTENANCE OF TRUCK, TRAILER, BUS, TAXICAB, PASSENGER CAR, AND ALL AUTOMOTIVE FLEETS.

Stripping *the* Thread » »

(The Editor's Column)

Breathes there a man with soul so dead,
Who never unto himself hath said,
When on a bolt, he stripped the thread:
"[illegible]"

WHEN TO TRADE IN?

● Many and varied attempts have been made to set up standards covering the question, "*When to Trade-In the Old Truck?*" The subject of vehicle replacement has been discussed in this and other automotive journals from time to time. Most of these discussions were somewhat involved, and while they looked all right on paper (to those who could understand them), when they were put under actual test, practically all of these "yardsticks" fell short somewhere. Since history repeats itself, it is not surprising that we come along with *another* attempt at setting up a standard replacement period, which you'll find hidden away in the article appearing on page 14 of this issue. In this latest effort, the job has been somewhat simplified. Don't let the graphs scare you; they're really very simple, and the "economic point," which is very plainly indicated thereon, is the thing that does the trick. And, like all other material appearing in this publication, this formula is the result of *actual experience* in fleet operation; *not* the gentle musings of an idle brain. So it ought to be valuable. What do *you* think? And if any of the others were too complicated, you can take our word for it that *this* one is not.

●

MANDATORY, BUT DESIRABLE

● The State of Connecticut rendered a *real* service to operators of motor vehicles when it enacted legislation compelling all motor vehicles of the wider type to be equipped with mechanical or electrical means of indicating a contemplated turn. One day spent on the Connecticut highways will convince the most skeptical that turn-signals are so effective that they even help to reduce the general animosity towards trucks and buses, that the average car owner has been known to harbor in his breast. In fact, it seems safer and more satisfactory to follow one of these larger motor vehicles equipped with turn-signalling devices, than to follow the average passenger car with no provided means of indicating a contemplated turn. The mere sticking out of your hand might indicate a left-turn, a right-turn or a dead stop. Or, it might mean that the driver is feeling for rain, is flicking the ashes off his cigar, or is describing that big one that got away. And should a lady be driving, we hesitate to even venture a guess as to what her hand stuck out of the window would mean. In making mandatory the use of turn-signals, the Nutmeg State has done the truck and bus industry a good "turn," we believe, if you will pardon the pun.

●

WHAT! NO LIGHT CARS?

● Recent price reductions in the low-price passenger car field, covering such vehicles as you (and I) are most likely to use for sales and inspection cars, have brought to a head one of our pet peeves that long has threatened to appear in print on this page. So here goes. It is the concensus of opinion among many operators on whom we have called, that any one of the leading passenger car manufacturers *could* (and should) bring out a six-cylinder automobile of conventional wheelbase and tread, to sell for about $500, *delivered.* Such a vehicle need not weigh more than 2,500 lbs. (preferably less) and could be provided with a pleasing, but not too stylish body, durable upholstery and a minimum of gadgets. It need not have excessive power or high maximum speed and would therefore be economical to operate. . . . With large production this could easily be accomplished, it is believed. Some might say that there would be a limited demand for this; others think differently. What has happened to the "light car" in this country? Is there such a thing? The light car seems to have grown into quite a heavy baby, from the standpoint of avoirdupois, performance, n'everything. That this has cut into the sales of medium and higher-priced cars, no one will dispute. But ours is not a sales problem. A light car such as we have outlined would not only find favor among commercial users, but would be "snapped up" by many used-car seekers. It would also permit the heavier cars to recapture their lost market, particularly if our present, so-called light cars were to gravitate back to the feather-weight class . . . Manufacturers and sales outlets will probably be able to shoot these arguments as full of holes as Dillinger's hat. Many fleet operators (as well as yours truly) would like to hear what the manufacturers have to say on the subject; there must be reasons and the reasons undoubtedly will be interesting. And, if it means anything to you, Mr. Manufacturer, the writer will place an order for such a vehicle as we have outlined, sight unseen. And so will many fleet operators, we believe.

●

FAMOUS LAST WORDS

● "Gee, the light's just turned yellow. Guess I'll step on the gas and get over the crossing before it turns red." (P.S. He lost the race).

●

H. Clay Fischer
Editor

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How to Select the Proper Automotive Equipment

•

Shall We Increase the Number of Vehicles in Our Fleet? Or, Should Certain Vehicles of Our Fleet Be Replaced? What Make and Type of Equipment to Select?

•

By Clinton Brettell,

Supt. of Garages, R. H. Macy & Co., Inc., New York City, N. Y.

THERE are three basic and fundamental phases to be considered when selecting new automotive delivery equipment. They are:

(1) Shall we increase our fleet?

(2) Shall we replace certain units of our fleet?

(3) What make and type of equipment shall we purchase for these additions and replacements?

It will be the purpose of this article to consider and discuss each of these phases very briefly and as simply as possible. (*Editor's Note: This subject has been discussed at great length on many occasions. This treatise, to our knowledge, is the first time that it has been presented in such brief, concise and elementary form.*)

(1) Additions: Briefly, the question of whether to increase the size of a given fleet or not depends, of course, on whether or not additional vehicles are needed. In most cases, it will be found that a number of hired trucks had been used for peak deliveries, before consideration of additional vehicles had been attempted. In such cases the recommended procedure consists of balancing "hired truck" expenses for the days the extra trucks were necessary, against total cost (fixed charges plus operating costs) for running those extra trucks, if purchased, for that number of days, and keeping them for the balance of the year.

For a low number of days' use, the "hired trucks" will show a lower cost, and, from a purely economic standpoint, it is the method to employ, particularly if dependability and control of service, advertising value, etc., are not of sufficient weight to warrant purchasing the trucks outright.

Where the number of days' use is greater, then all of the factors will appear on the side of "owning the truck." The "number of days" at which the transition occurs, might be termed the "critical point."

(2) Replacements: (See Charts 1 and 2.) Here the ideal to be striven for is the lowest *total* cost per mile, inclusive of investment (initial purchase price) and operating costs (maintenance-gas-oil-tires).

Let us analyze briefly these costs and their relation to the curves appearing in the charts accompanying this article. First we have the "investment." This is naturally a fixed amount, and as the total mileage of the vehicle increases with its life, the "investment cost per mile" decreases proportionately—rapidly at first; then gradually slowing up.

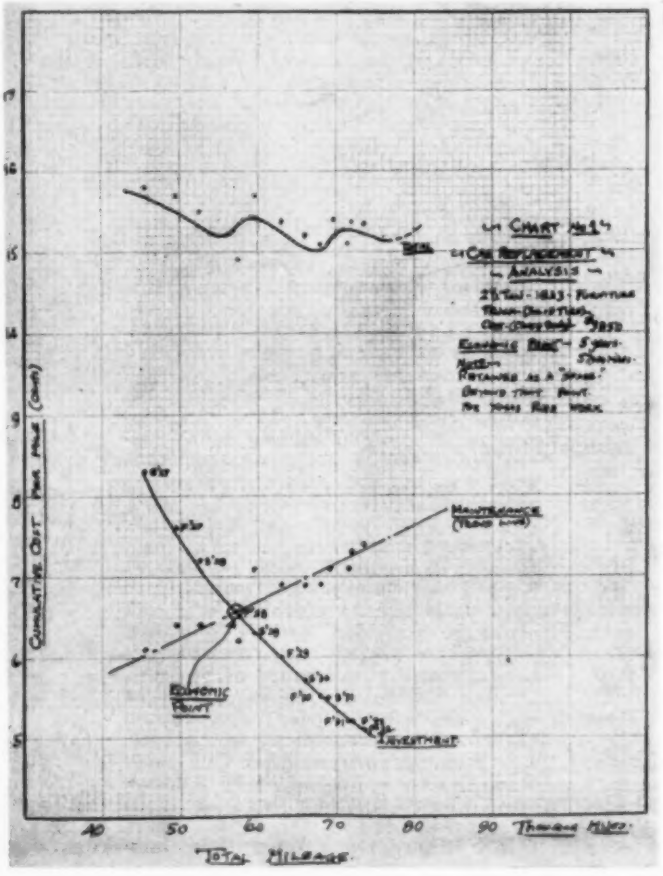


Chart No. 1—This typical truck replacement analysis of a 1923 model, 2½-ton truck with solid tires, reveals the economic point to be 5 years, or 57,000 miles. Note that this vehicle cost $3,850 in those days and think of what you can buy today for that money.

If this "investment cost per mile" were plotted on a chart — against total mileage—at fixed intervals in the life of the vehicle, it would start out as a very steep curve, and would gradually "slope out" toward the horizontal.

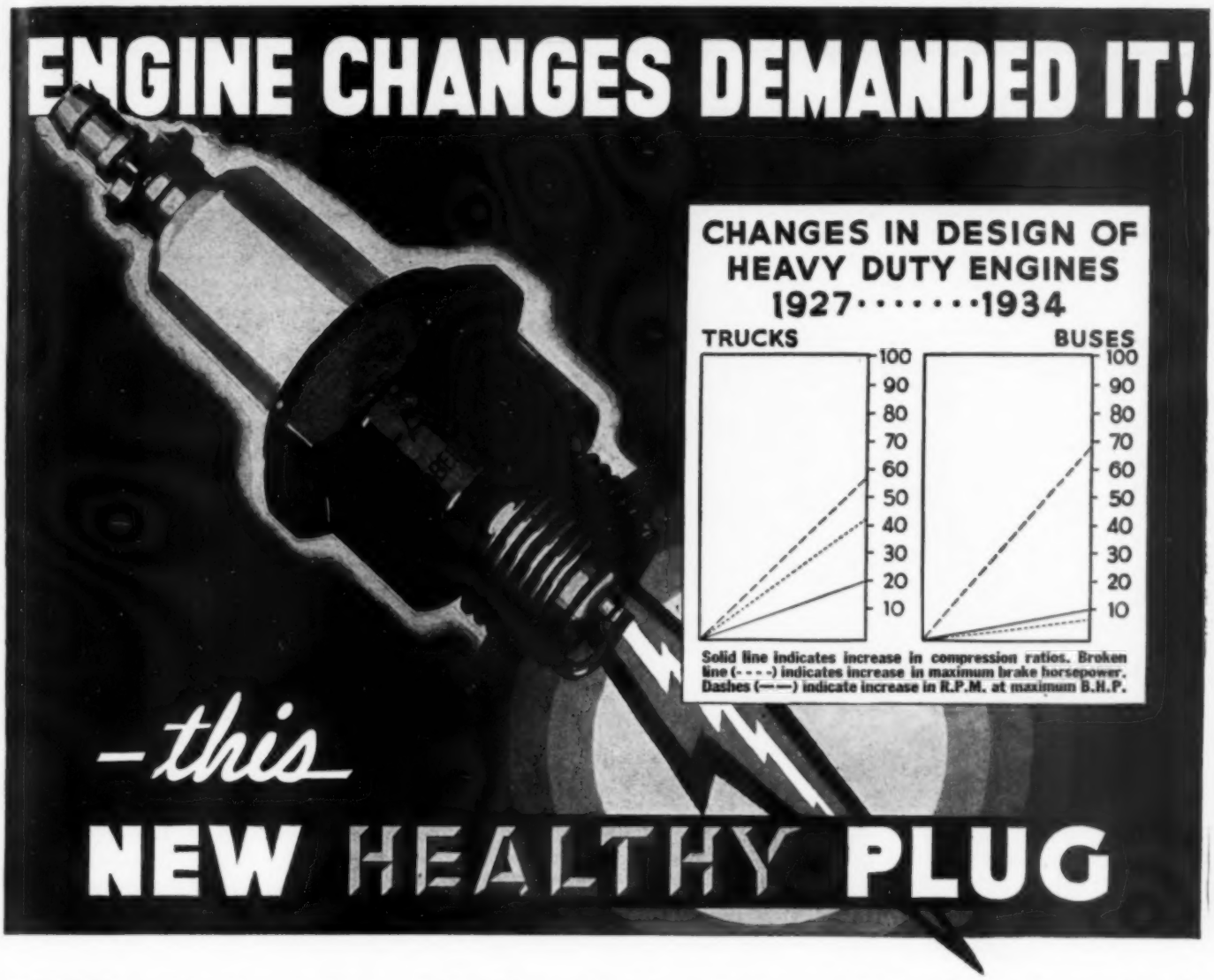
Next we have "operating" costs. These costs, on the contrary, particularly maintenance costs, show a continual increase with the life of the vehicle.

The "total" cost per mile includes both of the above. As shown on the charts, with one curve falling, and the other one rising, a point is finally reached in the life of the vehicle, where the total "flattens out," that is, it stops falling. It is self-evident, therefore, that this is the "economic point" in the life of the vehicle, and the time that it should be replaced with a new one.

To retire it *before* that point, would result in a higher cost per mile *over the life of the vehicle,*

(*Please turn to page* 16)

ENGINE CHANGES DEMANDED IT!



—this NEW HEALTHY PLUG

FEWER spark plug replacements! Longer spark plug life! Reduced risk of road failures and balled up schedules! Lower servicing and maintenance costs.

These are the new benefits which truck and bus operators enjoy with the new Pyro-Action Spark Plug . . . . designed by Robert Bosch A.-G., world's oldest plug manufacturer.

This new plug has been developed especially for the current trend toward hotter engines, indicated in the chart above.

The insulator of the new Pyro-Action Plug, made of a newly discovered synthetic composition, has the stamina to resist cracking at high temperatures.

The electrodes are made of a special alloy with unmatched ability to resist corrosion.

The center electrode is oversize—compare it with any other! The ground electrode is so constructed that there is no danger of breaking it off when adjusting the spark gap.

The heat range of this new plug is so much wider that there is a radical reduction in number of plug types. This simplifies your whole spark plug problem.

Think what this new Pyro-Action Plug can contribute to the economical and dependable operation of your fleet. Test them yourself. Ask our nearest representative to recommend a set of correct Pyro-Action Spark Plugs for one or more buses or trucks. Compare results, on a basis of cost-per-mile, with any other plugs you have ever used!

UNITED AMERICAN BOSCH CORP.
Springfield, Mass. - - New York, Chicago, Detroit

The American-Bosch organization has always taken pride in creating, designing, building and selling only products that are superior to those commonly in use. Proven leaders in their fields, they are built up to a high standard of quality and not down to a price.

Pyro-Action

the HEALTHY Spark Plugs

LICENSE ROBERT BOSCH A.-G.

A "HOW-TO-DO-IT" ARTICLE (*Continued*)

than would be attained by keeping it in service for a longer period.

To keep the vehicle beyond the "economic point" would result in no lower cost. At the same time, it would cause a more uncertain operation (as older vehicles are always more prone to failures), and it might suddenly run into a very high costly operation.

Another advantage in replacing the vehicle promptly at the "economic point" is seen in the fact that the fleet will always be more or less up-to-date, and this provides all the advantages of modernization in appearance, ease and economy of operation, good-will, advertising value, etc. And all of these may be had at *no increased*, and probably a *decreased* cost.

The exact "economic point" can be determined mathematically by differential calculus. To those not so mathematically inclined, it can be arrived at graphically, as shown on the charts accompanying this article, by finding the point of intersection of the two variable curves — investment and maintenance.

However, there are many other considerations that influence individual vehicle replacement, that no useful purpose is served in expending a large amount of effort to fix the "economic point" with mathematical accuracy. Some of these considerations are:

(a) All cars in a group (such as make, type, etc.) do not reach this point at the same age (year and month), due to many conditions.

(b) Purchase market may not be favorable.

(c) Funds may not be available.

(d) New models may be in preparation, but not in production, Etc. Rather than try to find the "economic point" with mathematical or geometrical accuracy, a more rational course to pursue would be as follows:

(A) To watch the "total cost" figures, and as they begin to "flatten out" on a large proportion of any group, to schedule the replacement of that group within the next year.

(B) To take the "high cost" members of that group, and try to "coast them along" to the end of their life—by various methods—in such a way that would bring their costs in line.

By this procedure, a definite vehicle replacement program is built up, well in advance, and this will be found to have the following advantages:

(a) Replacement expenditure can be tentatively budgeted, and prepared for, in the general business layout.

(b) Vehicles for replacement can be "eased up on" by transfer to less arduous service—and repairs can be cut to a minimum.

(c) Stock of replacement parts for these vehicles can be worked down to a minimum, so that there will be no appreciable loss on parts (which can be traded in with old cars) when this particular group of vehicles passes out of service.

(3) Selection: Selection of new vehicles consists of an analysis of the needs of the operation, a schedule of specifications, and a survey of the various vehicles and bodies available. Let us discuss each of these factors, in the order named:

(a) *Analysis of Needs:* A careful analysis of delivery requirements must first be made, to determine capacity, speed, hill-climbing ability, ruggedness, etc., required in both chassis and body.

(B) *Specifications:* These needs must be translated into basic specifications covering the the following factors:

(a) Body size, weight and general design.

(b) Payload.

(c) Turning radius and load distribution.

(d) Hill-climbing ability.

(e) Level-road performance, including acceleration, motor speed and maximum vehicle speed.

(f) Tire requirements.

(g) Accessories and equipment.

(h) Finish of vehicle.

(C) *Survey of Vehicles and Bodies Available.* These will be found to include the following:

(a) Printed specifications—these will give enough detail to show what vendors are in a position to quote; they will also enable you to eliminate such vendors as are not in a position to serve your needs.

(b) General specifications—as in item B—are then submitted to those vendors selected, requesting detailed specifications and quotation.

(c) Bids are then tabulated, showing price and important features of the various specifications; also standardization factors; previous experience with vendor and his product.

(d) The various items are weighed carefully and cataloged according to their importance. A pick of firsts, seconds, thirds and fourths under each item is then made. The vehicle showing the highest score is

(*Please turn to page* 54)

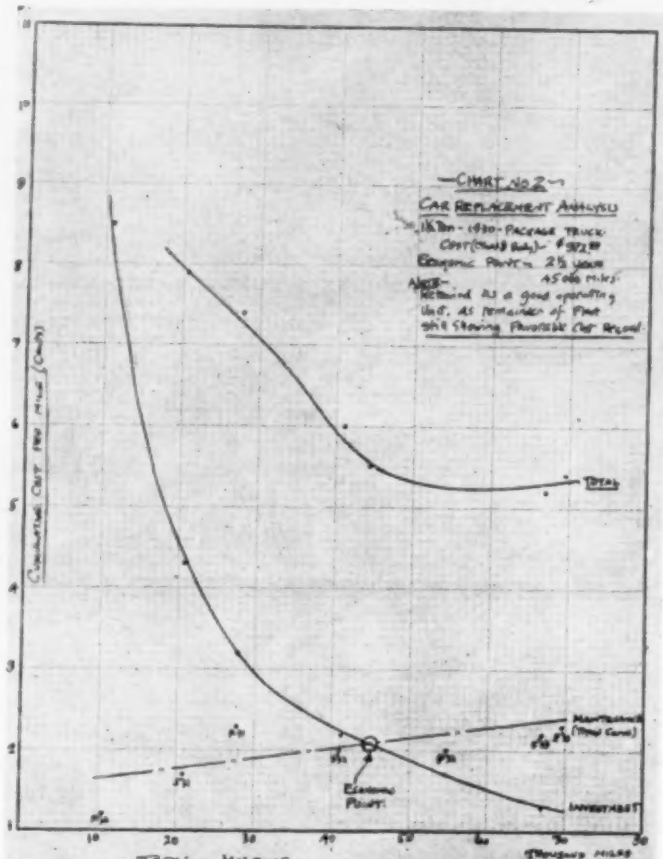


Chart No. 2—Another typical truck replacement analysis. This is a later and smaller truck (1930 model) that did not cost as much as the other one. Its economic point was 2½ years or 45,000 miles, which is not bad, considering the low purchase price of $972.00. This truck has not been disposed of, however, as the remainder of the fleet of this type still shows favorable cost records.

MR. TRUCK OWNER — AVOID COSTLY TIRE DELAYS

Get this New Tire with Triple Protection Against "Failure Zone" Breaks

WHEN a truck tire blows out in the sidewall "Failure Zone," it may cost you plenty—hours of delay—a good customer—and a new tire.

There is a way to check this loss. Equip all your trucks with tires that have positive sidewall protection. In tire-killing road tests Triple-Protected Silvertowns have been proved many times safer from such unwarranted blow-outs.

Special tires were built, half with ordinary construction, half with Triple Protection. On fast, overloaded trucks, these tires were run until they failed. Every tire failed in the half made the ordinary way! Not one sidewall break with Triple Protection!

Every Silvertown now has Triple Protection built right into the sidewall. That makes the sidewall as strong as the rest of the tire. Checks the cause of 80% of premature failures.

With this amazing new tire you avoid delays and accidents. Cut tire costs. Slash repair bills. Here are the three features that make such huge savings possible:

1 **PLYFLEX**—a *new*, tough, sturdy rubber material with greater resistance to stretch. Thus a layer of Plyflex in the sidewall distributes stresses and strains—prevents ply separation—checks local weakness.

2 **PLY-LOCK**—the new Goodrich way of *locking* the plies about the bead. Anchoring them in place. Positive protection against the short plies tearing loose above the bead.

3 **100% FULL-FLOATING CORD**—Each cord is surrounded by rubber. With ordinary cross-woven fabric, when the cords touch each other, they rub—get hot—break. In Silvertowns, there are no cross cords. No friction.

No Extra Cost For Triple Protection

Start saving with this different tire. *Triple Protected Silvertowns cost not one penny more than other standard truck tires.* See your Goodrich truck tire dealer today.

FREE! Valuable Book

A copy of the Silvertown Safety Manual for Truck Operators is yours for the asking. How to cut accidents. How to win free Safety Awards. Save money. Write Dept. T-110, The B. F. Goodrich Rubber Company, Akron, Ohio.

Goodrich *Triple Protected* **Silvertowns**
FOR TRUCKS AND BUSES

Say "I saw it in FLEET OWNER"—It Helps!

VEHICLE DESIGN

From the Standpoint of Fleet Operation and Maintenance

By F. L. Faulkner,

Engineer, Automotive Department, Armour & Co., Chicago, Ill.

IT is the opinion among operators of larger fleets of motor vehicles that a material reduction in servicing costs could be made, providing vehicle manufacturers cooperated with them in effecting standards of such items that do not enter into their fundamental design, but which effect vitally the mechanical servicing of these units.

Sufficient data has been collected to indicate a wide variance of opinion among the fleet operators, as to their actual needs. Likewise sufficient data has been accumulated from the manufacturers to indicate a lack of knowledge on their part, of the average operator's requirements.

Numerous items requiring constant maintenance have been studied and recommendations outlined with a hope that it will ultimately lead to definite standardization.

We anticipate this review of the situation will accomplish at least two things. First, a more unified opinion on the part of the operators as to their actual needs. Second, a better understanding and a more sympathetic attitude on the part of the manufacturer to the operator's requirements.

By way of explanation, permit me to state that the subject of this paper was assigned to me because of my being chairman of the S. A. E. committee that is studying designs of motor vehicles, from the operator's standpoint.

There has been considerable discussion of this subject at various transportation meetings, and it appears to be the concensus of opinion among many operators of motor vehicles, that considerable improvement could be made in the design and construction of motor vehicles, which would simplify materially the maintenance and servicing problem, and likewise reduce maintenance costs.

The Transportation and Maintenance Committee of the S. A. E. considered the subject of sufficient importance to appoint a sub-committee of their group to attempt to bring these comments and criticisms out into general discussion where same could be given the fullest consideration by both the operators and manufacturers' engineers.

I would like to have you accept the accompanying comments and criticisms as an expression of many operators with whom the subject has been discussed and their opinions incorporated herein. As a matter of fact, there are several recommendations with which I am not fully in accord, but, on account of the fact that the majority of operators contributing have expressed themselves favorably, this is the determining factor in the tentative standards we are setting up.

From the S. A. E. standpoint, I would like to have this paper looked upon merely as an outline of weaknesses in design, and lack of standardization among the manufacturers of motor vehicles, on so many seemingly unimportant items about which the vehicle operator is very much concerned.

It is not the intent of this paper, neither is it the purpose of the Committee, to make any recommendations as pertain to fundamental designs. In our preliminary work, we are concerned with design only as it affects the ultimate operating cost of the

"BUGS" to Be Ironed Out:

Light-Duty Passenger Car Field:

"Necessary to remove floor boards to lubricate clutch release bearings."
"No differential drain plug; extremely slow draining."
"Filler plug on transmission too close to emergency brake lever; cannot be removed without difficulty and loss of time."
"Necessary to raise hood to fill radiator."
"Gasoline filler so arranged that it is impossible to fill tank with any degree of speed."
"Very poor rear vision."
"Metal guide in front door split windows very inconvenient for hand signalling."
"Oil fill pipe very difficult to reach, as the opening is higher than the lower edge of open hood, and radiator stay-rods interfere with insertion of oil measure."
"Spare tire bracket mounting poor."
"Sheet metal work too light for commercial use."
"Deep skirted fenders impractical and maintenance cost high to keep in proper condition."
"Radiator mounting poor; will not stand hard work."
"Steering column position bad for average-size driver."
"Interior trim work not suitable for commercial use."
"Rear spark plug difficult to remove."
"Bayonet oil gage inaccessibly located."
"Engine too large for economical operation."
"Too many bright parts to keep polished."

Vehicles in Heavier-Type Field:

"Radiator and timing gear case must be removed in order to tighten main bearings."
"Valve tappets very difficult to adjust."
"Motor adjustments hard to make because of extremely wide fenders."
"Exhaust manifold extends down over valve cover-plate, making several valves inaccessible."
"To replace fan belt, it is necessary to remove radiator stay-rods, top hose-connections and pull radiator forward several inches."
"Servicing of battery difficult because of very close quarters and concealed negative cable under the cab body."
"Headlamp wiring requires unsoldering to remove radiator shell."
"Light duty axle requires dismantling of considerable portion, so that axle can be taken out in order to remove brake drum for inspection or replacing lining."
"Floor and toe board construction poor, making it very difficult to get at clutch and other parts."
"Body bows so installed that when work is done on the body, bows must be cut out and replaced."
"Many lubricating fittings are located where they are almost impossible to reach, due to interference of body, etc."
"Oil pump screen cannot be cleaned without removal of lower pan or crankcase."
"Water pump packing in many cases very inaccessible, requiring special tools."
"Tranmission cover plate difficult to remove because of practice of passing body stringers directly over transmission."
"Clutch inaccessible and should be designed so it could be overhauled without removing motor or rear axle."
"Fuses for lighting and horn service very inaccessible in many cases."
"Speedometer drive gears almost impossible to remove on some models."
"Too many new tools needed for each new model vehicle."
"Difficult to maintain correct steering geometry account of lightness in steering members."
"Drivers complain of draft in cab due to seat box not being filled in at bottom."
"Cab's width inadequate on many models; does not permit of necessary arm freedom."
"Difficult to remove spark and throttle control rods from steering column."
"Poor temperature control in cars; too hot in summer; too cold in winter."
"Rapid radiator deterioration due to poor mounting."
"Spare tire carrier mounting poor on many models."
"Frame cross-members poorly located for winch mountings."
"Power take-off opening on wrong side of transmission for some installations."
"Insufficient clearance between tire and spring for use of chains."

"GENERALS HAVE BEEN GIVING US DEPENDABLE, ECONOMICAL SERVICE FOR THE LAST FIVE YEARS – WE USE NO OTHER"

What a test for tires! 20 tons of lead per load—18 tires per unit—every day for 5 years

No proving ground in the United States could put tires to a more severe test than this. Golden Gate Motor Transport Company, San Francisco, hauls daily, under contract, 60 tons of lead concentrates from the mines of the Treadwell-Yukon (mining) Company at Tybo, Nev., to the railroad at Tonopah, Nevada.

To do this job Golden Gate Motor Transport uses a fleet of 3 trucks and trailers, as shown above. Each unit rolls on 18 General Truck Tires.

"Over these 70 miles of grinding gravel roads, with an average of 20 tons per load, General Tires are daily giving us perfect performance", says G. T. McNeily, sec.-treas. of the transport company.

"General Truck Tires have been giving us dependable, economical service for five years—we use no other. Prior to that time we tested out many makes of tires and came to the conclusion that General Tires were superior to all others for our exacting needs."

We will welcome the opportunity to show you what General Truck Tires can do for you on *your* job.

THE GENERAL TIRE AND RUBBER COMPANY
AKRON, OHIO

In Canada—General Tire and Rubber Company of Canada, Limited, Toronto, Ont.

GENERAL
TRUCK TIRES

FREE!

New Book on

HOW TO GET MORE SERVICE FROM YOUR TRUCK TIRES

Just off the press! Full of valuable information on how to maintain and operate truck tires—lower your tire costs—get better tire service. Every truck man should have this manual—and it's FREE. Just send the coupon below.

THE GENERAL TIRE & RUBBER CO., Akron, O.

Please send me a copy of your new truck tire manual as offered free in Fleet Owner.

Name_____

Company_____

Street_____

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Say "I saw it in FLEET OWNER"—It Helps!

WILL THESE STANDARDS REDUCE SERVICE COSTS? (*Continued*)

vehicles, primarily from the running maintenance and servicing standpoint. I wish to state further that it is not the intent of our Committee at this time to study designs of the controversial order.

Reflecting for a moment on the progress of the automobile industry, we find that in the space of a very few years, the automobile has developed from a pleasure type vehicle to a business necessity. The motor truck and motor coach, which are later developments of the pleasure vehicle, unfortunately have carried with them many elements of design common with the so-called pleasure type vehicle. Mechanical failures in the pleasure vehicle are annoying but seldom serious, whereas, in the commercial vehicle, disappointed customers on account of late deliveries due to faulty design or construction, is extremely costly.

As we follow the development of the motor vehicle and particularly the application of same to commercial work, we see many adaptations of so-called passenger car designs to motor trucks, and it is common practice among many manufacturers who produce both passenger cars and trucks to allow the passenger car influence to predominate in the motor truck design.

It has been aptly stated that "Engineering designs consist of happy compromises." But unfortunately, too many of these compromises made in favor of the passenger car, when used in truck designs, have proven costly to the operator.

I am not unmindful of the necessity of the manufacturer, with a large production of both passenger cars and trucks, taking advantage of the duplicate use of parts. Yet, same should be done with extreme care if maintenance costs are to be kept within reasonable limits.

To criticise the motor vehicle manufacturer today for the lack of standardization and lack of uniformity of performance without giving due credit to the fine products we have today, would be decidedly unfair. We all appreciate the improvements in motor vehicle design that have been made, but likewise, we fully realize the opportunity for further economies in operation if only we could develop a more sympathetic attitude on the part of the manufacturer to the fleet operator's needs.

We recognize that the number of vehicles owned by all of the large fleet operators consists of a very small percentage of the total vehicles manufactured. As a result, the manufacturers as a group will be guided by the demands of the majority. It is, therefore, necessary for the minority group to do a selling job with the manufacturer, from a standpoint that these changes we want made in design to lower our operating costs will likewise enable them to do a more economical job of servicing, although their vehicles be in the hands of individual owners.

I am not willing to lay all the blame at the manufacturer's door, regarding the lack of uniformity of design in the industry, as in my conversation with designing engineers they state that what I may want, some other operator does not want, and what the other operator is requesting, I do not favor. In other words, there appears to be as much difference of opinion among operators, as to what they want or what they need, as there is on the part of the manufacturer as to what he builds. We of the Committee recognizes our first big job among the operating personnel is to arrive at some agreement among ourselves as to what we need, and then only will we be able to influence the manufacturer to make the desired changes.

With this objective in mind, our Committee set about to study the criticisms of a large number of operators. The results of our studies have confirmed the manufacturer's belief that there is a wide variance of opinion among the operators as to just what they do want. This is accounted for, however, in the majority of instances, due to the vast differences in operating requirements, as our study has covered all types of operating from light duty to extremely heavy duty. A few of the outstanding objections are tabulated on the first page of this article. These complaints cover many makes and models. However, the cases that have been sighted indicate there is room for considerable improvement. In checking the design, or better the assembly of many makes and models we find that many manufacturers are doing a highly commendable job in locating their units in such a manner that same can be serviced quickly and economically.

It is common practice in this country to pull into a service station with a gasoline pump to your left. Is there any logical reason why the oil filler pipe should not be on the left-hand side of the engine and the gas tank fill pipe likewise on the left-hand side of the car? Should it be necessary to remove the floor mat and floor boards to check the battery for water level when a small opening in the floor board could be provided for this purpose? Should it be necessary to drop the oil pan, or in some cases to remove the lower crankcase, in order to clean the strainer around the oil pump? Should it be necessary to remove floor boards and clutch housing cover plates in order to lubricate the much-abused clutch throw-out bearings, when a simple lubricant fitting could be provided that would be accessible by lifting the engine hood? Recognizing that sediment in the cooling system, which deposits in the water jacket, is one of our greatest maintenance evils, would it not appear logical that the block should be provided with either side plates or adequate drains, so that same could be thoroughly cleaned?

Many questions of this character are uppermost in the operator's mind, and it is apparent that just as long as conditions, as outlined above, are encountered in current models, the answer is higher maintenance and operating costs. I see no reason why a man working on the grease racks should be required to have more than one wrench to remove the drain and fill plugs on the crankcase, transmission and rear axle for all makes and types of motor vehicles. Whereas, today, that individual is required to have a fairly complete set of tools.

In order, however, to make a start towards clarifying this situation, a list of questions was prepared and sent to several outstanding operators for an expression as to the items that should be studied and the extent of the study. This data was then prepared in questionnaire form and sent to many outstanding operators for their recommendations as to standardization. This data was compiled and a recommended standard prepared.

In checking through the returns and comments of various operators, it appears to me that the greatest amount of criticism placed against the manufacturer is not in fundamental designs, but is in reality, lack of coordination of units in making up the final assembly, as a preponderance of evidence shows conclusively that there are entirely too many extreme cases of in-

(*Please turn to page* 52)

MOTORS CONDITIONED For Heavy Duty in 2 or 3 Hrs.

Put an End to the Hazards of the Breaking-in Period with This New Vehicle for Suspending Colloidal Graphite . . . It Saves Time and Expense

NOW—you can eliminate all the dangers of the "breaking-in" period—and *put new or overhauled motors in condition for regular service in 2 to 3 hours' time.*

The vehicle in GRAPH-O-LYTE (colloidal graphite) lubricates close clearances that ordinary motor oil can not penetrate—keeps bearings cool—builds on all moving parts and cylinder walls a microscopic film of GRAPH-O-LYTE that *resists heat, friction and dilution.*

As a result, motors that are properly broken in with GRAPH-O-LYTE *may be put into heavy-duty service with absolute safety even on the first day.* The carelessness of drivers during the breaking-in period can not harm motors that are protected with GRAPH-O-LYTE.

The GRAPH-O-LYTE vehicle is scientifically compounded of *8 ingredients,* each with its own important function to perform. *It is not a diluent; it contains no vegetable or animal fats.*

Find out about GRAPH-O-LYTE. Write today for details of the "Performance Guarantee." If, at the end of 1,000 miles, GRAPH-O-LYTE has not more than paid for itself in saving of time and expense—*it costs you nothing.*

Send the coupon—now—and forget all your "breaking-in" worries. Grapholyte Mfg. Co., Evansville, Indiana.

(NOTE—Grapholyte Motor Conditioner is also valuable for breaking in any industrial bearings where clearances are close—electric motors, generators, machinery, etc.)

One-Gallon Trial Can Sent to Any Fleet Owner on Request

Graph-o-lyte

MOTOR CONDITIONER

SEND THIS COUPON TODAY FOR FULL DETAILS OF PERFORMANCE GUARANTEE

Date....., 1934

GRAPHOLYTE MFG. CO.
Evansville, Indiana

Gentlemen: Please send us complete details of the "Performance Guarantee" on GRAPH-O-LYTE Motor Conditioner.

Company..... *By*.....

Street Address.....

City..... *State*.....

Size of Fleet..... *Average Daily Mileage*.....

☐ Check here if you want one (1) gallon of GRAPH-O-LYTE Motor Conditioner shipped for trial use.

Say "I saw it in FLEET OWNER"—It Helps!

Uses Winter Oils *in* Summer Operation

Editor's Note:

● Here is another fleet experience story that should be particularly interesting and timely during these hot months, when many operators are using S.A.E. No. 40 and 50 oils. It represents not just "so much theory" but time-tried practice of over 18 months. Instead of asking you to read the complete paper: "Winter Oils for Automobile Engines," presented last month at the S.A.E. Summer Meeting by Messrs. Graves, Mougey and Upham, we carefully went through it and abstracted the following paragraphs, which we believe will interest you mostly. If this experience means anything, it looks like there will be very little future use for oils of heavier viscosities than No. 30 in our own industry. What do you think?—H. C. F.

FLEET operation records are of value in that they represent an average of a large number of operating units or cars. During the winter of 1932-1933, the fleet of the Dayton Power and Light Company, operating 200 pieces of equipment in Southern Ohio, used an SAE-20 oil in all their equipment. The records show that during the occasional short periods of zero weather experienced in that winter, considerable difficulty was experienced in starting those cars that were not kept in the heated garage.

Ordinarily this fleet changes from winter to summer oil in May, and in May, 1933, SAE-30 oil replaced the SAE-20 oil used during the winter. From the first to the 15th of May, the fuel economy of the fleet, instead of improving as would have been expected with the warmer weather, showed a pronounced slump, and it was decided to discontinue the use of SAE-30 and return to SAE-20 in an attempt to improve the gasoline economy. For the last half of May, when SAE-20 was in use, the gasoline economy of the the fleet picked up to a marked extent, and it was decided to continue throughout the summer months with the use of SAE-20.

In October, this fleet had in the past changed from summer to winter oil. At this time, (October, 1933), the Transportation Supervisor consulted the Chrysler Engineering Division, and on their recommendation, went to a 10-W oil for use during the winter months. The 10-W oil was put in in December, 1933, and although the temperature for that month averaged four degrees lower than the temperature of November, 1933, the gasoline economy showed an appreciable improvement.

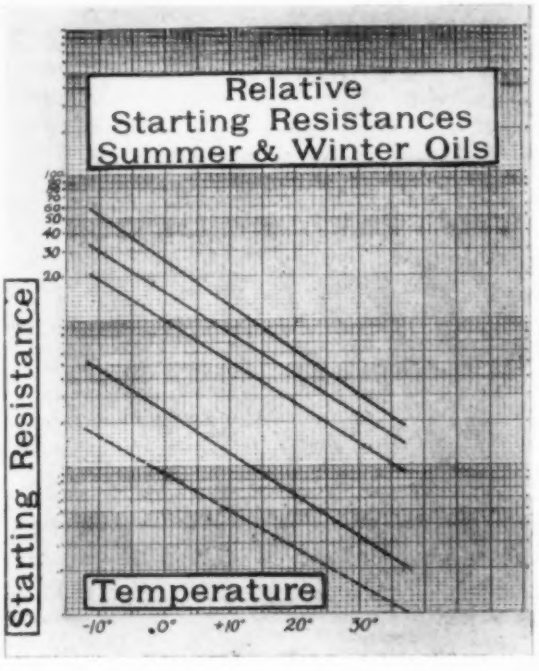
The 10-W oil was continued throughout the winter months, and for the first time in the history of this operation, no starting difficulty was experienced with the cars kept in unheated garages. The only two cases of starting difficulty on record for the winter of 1933-34 developed in two cars that were using SAE-20 oil and had not come in for their recommended change to 10-W. Incidentally, the weather at times during this period, was abnormally cold and a twenty-year low level was reached in February, and still no starting difficulty was experienced.

In going to 10-W oil, the main consideration was that of increased gasoline economy, and it was anticipated that the fleet would experience somewhat greater oil usage. However, a check of the months of December (1933), January, February and March (1934), indicates that the oil usage was not appreciably greater than that of past years when SAE-20 oil was used. At the most, there was not greater than 5% variation from previous years. It is the intention of this fleet to use during the summer months an SAE-20 (or 20-W oil) and change to 10-W for the winter operation extending from November to May inclusive.

Even though 20-W is usually recommended for most of the winter temperature conditions encountered in the Detroit area, the low viscosity of 10-W oil is needed during the occasional sub-zero spells for satisfactory starting. The 10-W oil is satisfactory during winter as is evidenced by the experience of seven employees of the Chrysler Engineering Department who used 10-W in their personal cars this past winter. Most of the driving was done at moderate speeds, but the records show considerable driving done at 50, 60 and 70 M.P.H. The seven cars represent a total mileage of 18,595 miles, with an average oil consumption for the period of 3,686 M.P.G. Needless to say, no starting troubles were experienced.

At the General Motors Proving Ground tests were run in August, 1933 on eight automobiles made by different manufacturers. Oil consumption tests were made using five different oils. During this series of tests over 1,200 miles were

(*Please turn to page* 55)



This chart illustrates the friction or drag of various viscosity oils. Do not try to read the figures. We are showing this simply to emphasize the fact that heavy oils cause friction and cut down power. Note how this increases with lower temperatures. The experience given in the accompanying article seems to bear this out quite well; don't you think so?

KOLD-HOLD
FORCED CONVECTION SYSTEM

THE NEW IDEAL TRUCK REFRIGERATION

for Meat • Lard • Butter • Milk • Vegetables • Flowers Candies • • any product requiring 35 to 60 Degree Refrigeration

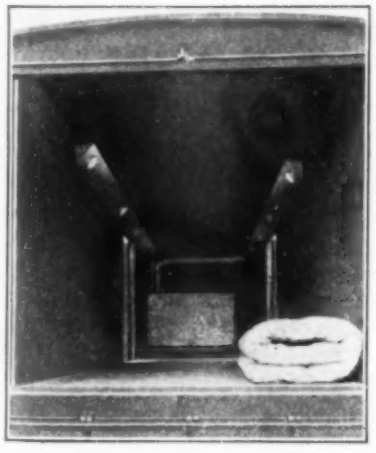
The YORK MOTOR EXPRESS 10-ton trailer shown above, equipped with the KOLD-HOLD FORCED CONVECTION SYSTEM, hauls meats, butter, frozen eggs, butterine, etc., with unequalled economy. Temperature of product delivered same as when loaded.

IN hundreds of low temperature (ice cream) truck bodies the KOLD-HOLD System has proven economical, and the most advantageous means of refrigeration ever devised.

NOW, through the development of its forced convection system, the KOLD-HOLD Manufacturing Company extends the same unprecedented economy, reliability and other outstanding advantages to the transportation of all products requiring temperatures in a range from 35° to 60° F.

NOTE THIS LIST OF ADVANTAGES

1. Any Temperature desired from 35 to 60 degrees may be obtained with close temperature control.
2. Uniform Distribution of Refrigeration to all parts of the body may be obtained with a variation of less than 5 degrees.
3. Heavily insulated curtain and control dampers in ceiling ducts provide for confining refrigeration to any portion of the body, thus permitting the hauling of mixed loads.
4. No refrigerant or containers to handle.
5. No drip or muss to make the drivers cuss.
6. No contaminating odors.
7. No necessity of unloading undelivered portion of load at night to prevent it from spoiling.
8. Unlimited hauling range.
9. Refrigeration conserved when not required, as, for illustration, when doors are open or non-refrigerated payload is carried.



Typical Installation

This view shows the insulated housing containing the three KOLD-HOLD Cooling Units installed in front end of body, and the ceiling ducts through which the air of the body is circulated by means of a thermostatically controlled fan, when refrigeration is desired. The Cryohydrate in the KOLD-HOLD Units is frozen by means of either electric or engine driven compressor mounted on truck, or by hook-up with central plant or compressor located in garage.

Write NOW for complete information and Data Sheet to obtain our free expert engineering analysis service.

KOLD-HOLD MFG. CO.

R. E. OLDS, Chairman

LANSING • MICHIGAN

Say "I saw it in FLEET OWNER"—It Helps!

Three Interesting Studies on Bus Performance

For seven years the buses of the operators shown in the above fleet picture have been faithful to the riding public of Amarillo, Texas. The fleet, originally consisting of seven trucks adapted to urban bus service, went into operation for the Amarillo Traction Company in 1926. Six are still in daily use and are still manned by their first drivers. Running 365 days in the year over three different routes, the vehicles have traveled more than 2,744,900 miles and not one has ever been involved in a fatal accident.

Safety Practices in Our Bus Fleet

By Geo. W. Marinel,
Marinel Transportation Co., N. Chelmsford, Mass.

IN selecting the men who were to drive our buses, great care was taken that only men of the best possible character, as well as only those possessing perfect driving records should be considered. We have fifteen men in our fleet. With two or three exceptions these are married men with families. We are in every instance well acquainted with their character and reputations.

As these men drive the buses which carry 1,200 children to school every day, from all parts of the town, north, south, east and west, it is only natural that I, as the owner of the fleet and employer of the drivers, should have utter confidence in the men who represent me.

As each bus returns from its last trip of the day it is given a thorough inspection. This does not happen once or twice a week, but *every day*, seven days a week.

Particular care is given to tire inspection. It is a strict rule in our fleet that no tire which is in any way showing signs of wear, and never on any account one which has been patched, shall be allowed to remain on either of the front wheels. A tire on a front wheel which is the least bit smooth is changed to a rear wheel if needed there, or laid by until needed. The tires of the front wheels are at all times practically new. As there are all sorts of road conditions to cope with in our work, we have insisted that this rule of tire efficiency be adhered to most rigidly.

The matter of perfect brakes is a subject of such obvious importance that it hardly seems necessary to dwell on this point, other than to say that brake inspection is a daily procedure.

One of the first requirements made of our drivers is that they learn to use the rear-view mirrors. These mirrors are, in my opinion, one of the greatest safety measures offered to drivers of motor vehicles, and one of the ways in which many accidents might be averted if only more drivers realized that the mirrors were placed in position to be used, not ignored.

The matter of speed is also given strict attention. Every driver in the fleet knows that there is no such thing as "making up time" on his run. A steady speed of about 30 miles per hour in open country, with 20 to 25 in town is maintained. This sometimes, of necessity, varies. In transporting the children to and from school, every driver must get out of his seat, step down into the highway, ahead of the child or children who leave the bus at that point and personally see that the way is clear for their passing. This act has averted many accidents, a fact for which I personally can vouch.

The foregoing observances of safety are some of the important safety factors to be found in our fleet. It is understood, of course, that our vehicles are completely equipped with mechanical safety devices, the rest depending on the efficiency and conscientiousness of the drivers.

●

Best Experience Rating in the Southwest?

FIGURES on the operation of its equipment, recently released by the Amarillo Traction Company, Amarillo, Texas, disclose some of the reasons why this company boasts the best "experience" rating in the Southwest. Credit for the company's enviable standing may be divided evenly between capable supervision and the splendid performance record of its fleet of trucks adapted to urban bus service.

In seven years of continuous operation the Amarillo Traction Company's equipment has made an excellent showing in all important phases of this type of service.

Most remarkable of all, perhaps, is the fact that in this time, carrying millions of passengers in all kinds of weather and under all operating conditions, not one of this fleet of buses has been involved in a fatal accident.

Six of the original fleet of seven vehicles, purchased in 1926, are still in daily operation, running 365 days in the year. To date they have piled up a total of more than 2,744,900 miles. Six of the original operators are still piloting the vehicles they began to drive eight years ago.

Officials of the traction company in charge of motor vehicle operation are so well pleased, it is said, with the performance of these trucks they have announced their intention of replacing them, when necessary, with the same type.

The fleet is used over the McMasters Street, South Loop and Country Club districts in Amarillo. The selection of these routes has afforded all parts of West Amarillo with transportation, radiating from a single downtown terminal, located in the center of the business district.

The equipment makes a total of 164 round trips daily from the terminal to the districts named. The average

(*Please turn to page* 28)

HIGHER QUALITY MAKES THEM MORE DEPENDABLE

Don't believe that all gaskets are exactly alike. In Fitzgerald Gaskets you get a product notable for finest materials and skilled workmanship. Only natural color, long-fibered asbestos is used in the fillers of Fitzgerald Gaskets—for extra strength, greater resistance to pressure... Install these superior gaskets in your trucks; you will appreciate their dependability... The Fitzgerald Manufacturing Company, Torrington, Conn.

Now ready for distribution—the New 548 page FITZGERALD Gasket Catalog No. 34; also Alphabetical reference list No. 69.

FITZGERALD GASKETS

THE COMPLETE LINE THAT COMPLETELY SATISFIES

Say "I saw it in FLEET OWNER"—It Helps!

This Should Help to Prevent Overloading

By Wilson C. Bray,
B. F. Goodrich Rubber Company, Akron, Ohio.

But You Must Cooperate and Not Load Beyond the Capacity of Your Tires, If You Expect to Get Good Mileage

OVERLOADING is responsible for more truck tire trouble than any other single cause.

This tremendous waste of time and dollars can be avoided if truck and bus operators will always cooperate by equipping their vehicles with tires large enough to carry the heaviest loads carried by the vehicle in question.

The successful truck tire distributor will always "tailor" the tire to the job and will never make an installation without complete information regarding loads to be carried, distribution of the load, speeds, etc.

Load and inflation schedules are given on this page, the bold face figures being the *maximum desirable* loads. It would be well to keep these tables for ready reference.

There are, of course, many other factors which contribute to the economic wastage which occurs through improper use and care of tires. Some of these will be enumerated briefly in the following paragraphs.

Check air pressure daily. These fabric breeks are the direct result of excessive flexing and heat produced by overload or too low air pressure. For best results, make sure the truck is equipped with tires large enough to carry the load and that the tires are mounted on proper size rims.

Skidding; misadjusted brakes: Skidding of the wheel through a misadjusted brake, causing a locking of the wheel, often results in a skid which grinds through the tread and plies of cords, rendering the tire unfit for further service. Constant check on brake adjustments will remedy this.

Tread cuts caused by tight chains: Chains should always be applied loosely enough so they will not continually come in contact with the tire at the same place as the tire runs on the road. There should be a slight slippage of chains as the tire revolves.

Shoulder bruise: This injury is the result of hitting an object with sufficient force to drive the tire to the rim (generally an underinflated

HEAVY-DUTY BALLOON TRUCK AND BUS TIRES
MAXIMUM LOAD PER TIRE IN POUNDS

Minimum Inflation Pressure	5.50 20"	6.00 20"	6.50 20"	7.00 18"	7.00 20"	7.50 20"	7.50 24"	8.25 18"	8.25 20"	8.25 22"	8.25 24"	9.00 18"	9.00 20"
40	**1225**	1300											
45		**1400**	1525										
50			**1650**		1775	1925	2225		2100	2350	2500		
55				**1700**	**1900**	**2100**	**2400**		2325	2575	2725		2650
60								**2300**	**2550**	**2800**	**2950**		2950
65												**2900**	**3250**

	9.00 22"	9.00 24"	9.75 18"	9.75 20"	9.75 22"	9.75 24"	10.50 20"	10.50 22"	10.50 24"	12.75 20"	12.75 22"	12.75 24"	13.50 20"	13.50 22"	13.50 24"
55	2900	3050													
60	3200	3350		3300	3600	3800									
65	**3500**	**3650**		3600	3900	4100	4100		4600						
70			**3500**	**3900**	**4200**	**4400**	4400		4900						
75							**4700**	**5000**	**5200**						
80										6400					
85										6800					
90										**7200**	**7700**	**8000**			
95													**8200**	**8800**	**9100**

"...and so gentlemen,"

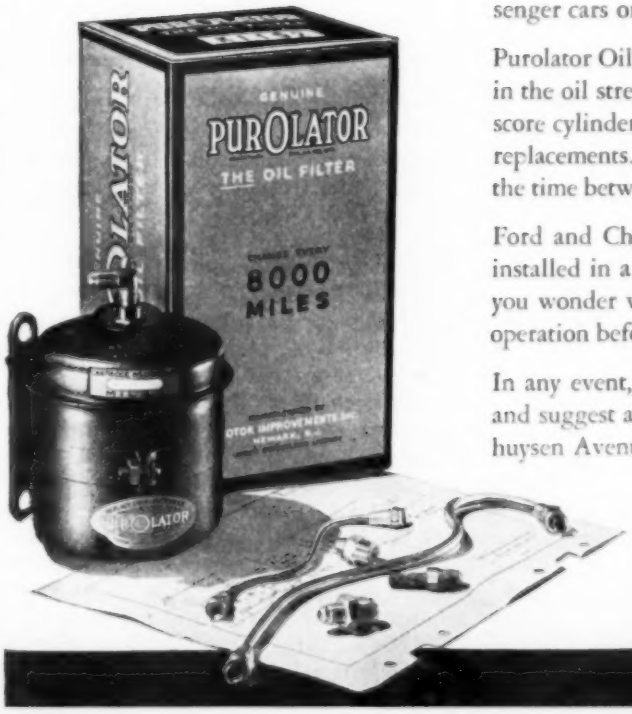
It seems apparent that no motor fleet has realized its greatest efficiency and economy of operation unless it is equipped with Purolator Oil Filters.

This is a message of maintenance to those executives in charge of that important phase of fleet operation. And if the various transportation units in your charge include a substantial number of Fords and Chevrolets (either passenger cars or trucks) it is your plain duty to, at least, look into the matter.

Purolator Oil Filters not only catch and hold the crank case settlings that get in the oil stream and turn fine lubricants into harsh, grinding abrasives that score cylinder walls, and break down bearings, and cause costly repairs and replacements. But they keep the oil clean . . . effective . . . greatly lengthen the time between the necessity for crank case drainings.

Ford and Chevrolet kits come to you with all the trimmings . . . can be installed in a very few minutes . . . and pay for themselves so quickly that you wonder why this positive factor of saving hasn't been applied to your operation before.

In any event, get the details. Have a Purolator representative call on you, and suggest a practical test. Motor Improvements, Inc., 353 Frelinghuysen Avenue, Newark, New Jersey.



PUROLATOR

The Oil Filter on Your Motorcar

Licensed Under Sweetland Patents

Say "I saw it in FLEET OWNER"—It Helps!

WILL YOU HEED THIS ADVICE on TIRES? (*Continued*)

tire) breaking the cords at the point of contact.

In all these bruise conditions, regular inspection of tires is the only practical method to prevent complete destruction of the casing. These inspections will bring injuries to light, and make it possible in most cases for repairs to be made allowing the tire to give continued service.

Some other injuries to tires are:

Cut by valve bridge: Either the casing creeps on the rim (in the case of a flat) or the tube works around the inside, causing numerous cuts by the valve bridge.

Cut by misplaced flap: In some of these cases the flap was not centered properly, which permitted it to slip down into the casing. Cutting of the carcass by the edge of the flap is bound to result.

Rims-spacing: It is very important that standard rim and spacing recommendations be followed. A tire mounted on too narrow a rim not only has less carrying capacity but will fail prematurely due to added strain above the rim flanges.

Bead failure due to faulty rim: This is a failure which might show up in any tire where the removable flange does not seat properly or is bent out of shape. Only a new ring or rim will correct this trouble.

Bent or rusty rims: Bent or rusty rims are responsible for considerable monetary loss to tire consumers. Care should be always taken to see that rims are in proper condition before applying tires.

These latter injuries are nearly always caused by improper mounting of the casings, while the former are due to the accidents of service.

Reasonable care on installing tires will eliminate many failures due to the latter class of causes, just as regular inspection will often detect injuries in the former class.

TRUCK AND BUS HIGH PRESSURE TIRES
MAXIMUM LOAD PER TIRE IN POUNDS

Minimum Inflation Pressure	3½"	4"	4½"	5"		6"	
				30x5"	34x5"	32x6"	36x6"
50	600						
55	675	800					
60	**750**	900	1050	1400	1600		
65		**1000**	1150	1500	1720	1825	2100
70			**1250**	*1600	1840	1950	2250
75				**1700**	**1950**	2075	2375
80						**2200**	**2500**

	7"			8"		9"		10"	
	32x7"	34x7"	38x7"	36x8"	40x8"	38x9"	42x9"	40x10"	44x10"
70	2150	2375	2725						
75	2300	2525	2900	3075	3425				
80	2425	2675	3050	3250	3625	3900	4325		
85	**2550**	**2800**	**3200**	3425	3825	4100	4550	4750	5250
90				**3600**	**4000**	4300	4775	5000	5500
95						**4500**	**5000**	5250	5750
100								**5500**	**6000**

* 6 ply tire only.

●

INTERESTING BUS and TIRE PERFORMANCES

(*Continued from page* 24)

distance of each round trip is six and one-half miles. The buses provide 15-minute service on all routes, for 14 hours a day. On Sixth Street, which is traversed by all McMasters and South Loop buses, seven and one-half minute service is furnished most of the day.

One of the younger men employed in connection with the operation of the buses has practically grown up with them. He is W. D. Spillers, Jr., shown second from the right in the accompanying picture of the fleet. The buses were all purchased from the Cullum Motor Co., Inc., Dodge dealers in Amarillo.

●

Perfect Tire Record for 11,357,810 Miles

By J. H. Stephens, Supt.,
Washington Railway & Electric Co., Washington, D. C.

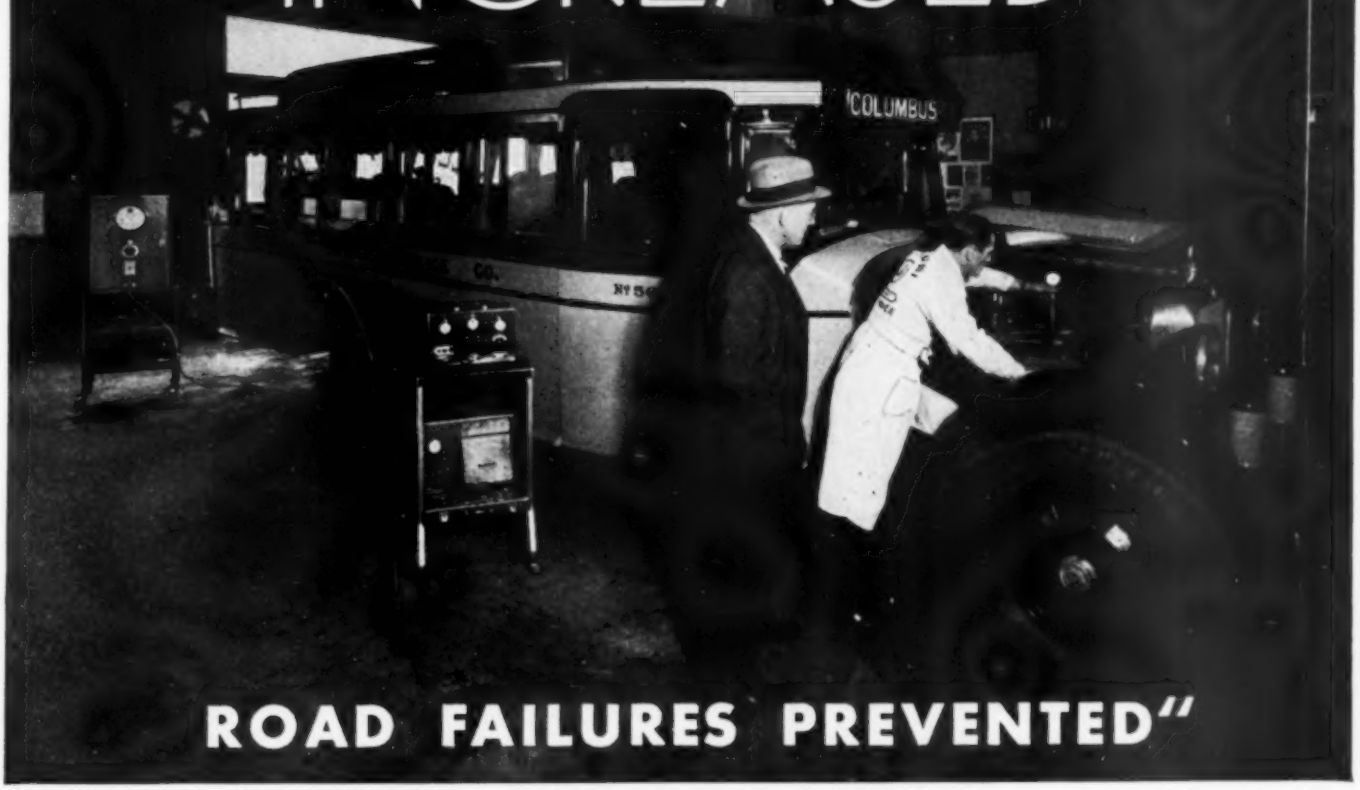
AN outstanding example of increased tire economy in commercial service is the completion of the third consecutive year by the Washington Railway and Electric Company, Washington, D. C., totaling 11,357,810 bus miles without a minute's delay due to tires—a distance that would mean 23 round trips to the moon. This record shows how costs can be lowered and delays eliminated due to developments and improvements in tires and methods of servicing them.

The total mileage in 1931 was 3,592,585; in 1932—was 3,646,120 and in 1933 was 4,119,105 miles. This shows the growth—which could be expected with such tire performance. The total bus miles, 11,357.810 for the three years, with six tires to each bus, means a total of 68,146,860 bus tire miles, without a single moment's delay due to tires.

Unusually high mileages were obtained on the tires in spite of the rapid travel and continuous service. One tire for instance, recently removed, had given 63,000 trouble-free miles during a period of approximately two years before it was taken out of service.

The performance is a tribute to modern tire engineering and construction. The record is an incentive to truck and bus owners and operators, large or small, not to be satisfied until they have obtained creditable economy records by dependable equipment, systematic inflation, inspection, alignment, proper sizing for overloads, and other factors of tire economy.

"GASOLENE MILEAGE SUBSTANTIALLY INCREASED



ROAD FAILURES PREVENTED"

writes THE VALLEY PUBLIC SERVICE CO. in praise of POWER PROVER SERVICE

"YOUR POWER PROVER Service and precision tools bring to light many items and adjustments that are in the primary stages of failure and would cause a road failure before long. In addition, you have given us a very substantial increase in miles per gallon and fuel saving on our 28 Studebaker buses. We recommend this service highly."

Those are benefits POWER PROVER Service has brought to the fine fleet operated by The Valley Public Service Company of Columbus, Ohio.

4000 fleet operators now use this money-saving service

This motor testing and adjusting service, offered exclusively by Cities Service, includes three distinct features: (1) An analysis of exhaust gases by the POWER PROVER; (2) A comprehensive 23-step Tuning Routine; (3) Use of exclusive and patented Cities Service Tuning Tools and Precision Instruments which make possible adjustments to the thousandth of an inch accuracy.

These benefits open to you

During the past year operators of POWER PROVER fleets have saved hundreds of thousands of gallons of gasolene and oil and an amazing sum of money on maintenance. You, too, can cut your gasolene and oil costs and make substantial savings on maintenance by adopting POWER PROVER Service. The cost for this service is trifling . . . just a few cents per vehicle per month. So don't wait. Investigate at once. Write, wire or telephone for a demonstration of POWER PROVER Service on your own fleet. Do it today to be sure of more profit during 1934. Address your request to Cities Service POWER PROVER, Room 702, 60 Wall Street, N. Y. C.

RADIO CONCERTS—*Fridays at 8.00 p. m., E. D. T., over WEAF and thirty-three N. B. C. stations*

CITIES SERVICE POWER PROVER

Say "I saw it in FLEET OWNER"—It Helps!

Safety Glass Practice to be Analyzed

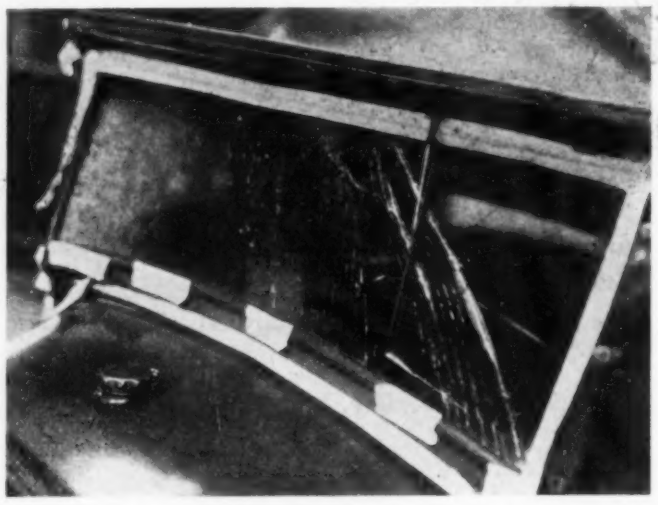
"Committee" To Survey Safety Glass Problems for Motor Vehicle Use; To Write Specifications, Tests and Performance Requirements

AUTOMOBILE engineers, safety glass technologists, state highway administrators, representatives of the general public, fleet owners and insurance groups will write specifications, methods for test and performance requirements for safety glass. A technical subcommittee of this wide representation has been appointed by Alfred Devine, deputy registrar of motor vehicles, Massachusetts, who is chairman of the American Standards Association Safety Glass Committee.

When the Safety Glass Committee met in New York recently, it was pointed out that the confusing diversity of claims for safety made by motor vehicle manufacturers and safety glass on the one hand, and the present tendency of state legislatures regulating the use of safety glass in cars on the other, make speed in developing acceptable standards imperative.

The committee decided to concentrate its attention first upon the problem of safety glass used in motor vehicles before working on the problem of safety glass used for goggles and other industrial purposes. Later this subject, together with the use of safety glass for motor boats and aircraft will be taken up by another technical committee.

The automotive industry is the largest single user of plate glass in the United States. More than 40 per cent of all the polished plate glass manufactured in the country in 1933 was used in cars, buses, and trucks. It is by far the largest user of laminated plate glass.



In order to show the difference between plain and safety glass, a broken pane must be exhibited, as illustrated above. There have been many terms used to describe safety glass, the new definition of which shall be: "Safety Glass shall be construed as meaning glass designed to promote safety and to reduce or minimize the likelihood of personal injury from flying glass when the glass is broken."

The National Bureau of Casualty and Surety Underwriters and the National Bureau of Standards called for the organization of the Safety Glass Committee by the American Standards Association. Thirty-two technologists, insurance engineers, and other experts were present at the recent organization meeting.

It was brought out at this meeting that eight states now have legislation covering the use of safety glass in motor vehicles. Next January, 44 state legislatures will convene and many of these bodies will be requested to pass laws on this subject. The specifications written by this committee will be of great assistance in drafting such laws and will be a guide to state motor vehicle administrators in their duties.

The terms "non-shatterable" and "non-scattering" were decried by several of the technologists present at the meeting because such generalities, it was pointed out, were misleading. The committee voted approval of this definition of safety glass:

"Safety Glass shall be construed as meaning glass designed to promote safety and to reduce or minimize the likelihood of personal injury from flying glass when the glass is broken."

The technical subcommittee proposes to take advantage of all of the research and technical work done on safety glass by the glass manufacturers, makers of plastics used between sheets of plate glass in the laminated types, the National Bureau of Standards, automobile research laboratories, and independent engineering and scientific agencies in making its study of the subject.

Not only the laminated types will be considered, but also heat-treated glass and glass in which has been imbedded wire.

The subcommittee has been asked to submit a recommendation covering the types of safety glass to be required in various parts of automobiles. When safety glass was introduced as a part of standard equipment for cars, it was used chiefly in windshields. Now, many cars furnish safety glass throughout, but the practice in this regard is by no means standard.

Special consideration will be given to recommendations for the use of safety glass and the types of glass used in taxicabs and buses. Railroads, too, are interested in the use of safety glass. A representative of the American Transit Association pointed out that several important railroad companies own or operate bus lines.

The committee elected Mr. Devine, who represents the Eastern Conference of Motor Vehicle Administrators, as chairman. A. N. Finn, National Bureau of Standards, was elected vice chairman and Maxwell Halsey, traffic engineer, National Bureau of Casualty and Surety Underwriters, was elected secretary.

Members of the technical subcommittee named by Mr. Devine are:

A. F. Odell, duPont Viscoloid Co., and E. A. Wilson, Fiberoid Corporation, representing plastic manufactuers;

R. A. Miller, Pittsburgh Plate Glass Co., and Mr. McCusker, Saftee Glass Co., representing glass manu-

(*Please turn to page* 56)

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SILVER KING HYDRAULIC JACKS

Expertly engineered for every requirement of fleet service

ONE PIECE BODY *Leak proof*

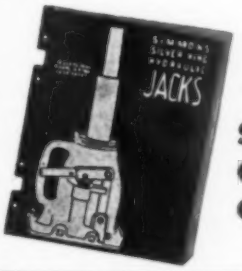
PYRAMID CONSTRUCTION *Greater Strength*

SIMPLICITY OF DESIGN *More Compact*

LONGER RAM *Greater lift*

30% LESS PARTS *Easier to Service*

RESERVE POWER *Safe and Sure*



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UNEQUALLED PERFORMANCE AND LOW UPKEEP COST

THE SIMMONS MFG. CO., Cleveland, O.

Send me your new Silver King Hydraulic Jack catalog.

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Address_____

City_____ State_____

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•

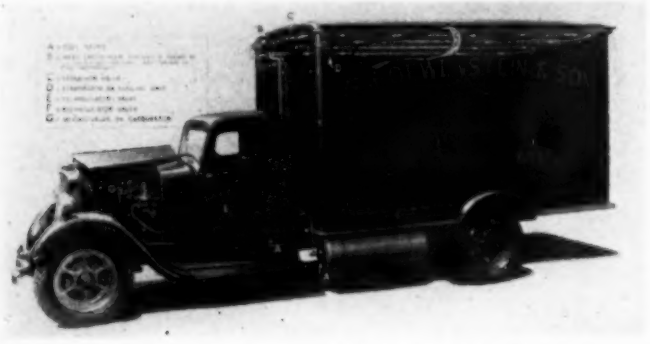
A Long Time Coming, But Now Ready, This Motor Fuel That Cools Your Truck Bodies and Then Runs the Engines • System Described in Our March, 1932 Issue Is Finally Ready for Distribution

•

WAY back in March, 1932 B.C. (Before Codes) we presented an article entitled "Motor Fuel Keeps Body Cool"—the same title as appears on this one, you will note. That article was a bit premature, however, as it announced a system of truck-body refrigeration that was still in the process of development. As a result of this article, we received several dozen letters asking for further information, which could not be supplied at the time, because the manufacturers were not "ready" to go ahead with the system.

This development work is now completed, and, as a result of a recent agreement between the Shell Oil Company and the McCord Radiator & Mfg. Co., of Detroit, the latter has become the exclusive licensee in the United States for the manufacture and sale of this system, in which Petrogas, a Hydrocarbon distillate similar to Propane, is used as a fuel and refrigerant.

The two-ton Dodge truck (size of refrigerating compartment 6′ x 6′ x 11′) in the service of S. Loewenstein & Son, Packers, Detroit, shown in the accompanying photograph, was one of the first trucks to be equipped with this system, east of the Rockies.



This phantom view gives you an idea of the simplicity of the new Petrogas-McCord truck refrigerating system. Now that all of the bugs are ironed out and it's ready for distribution, no doubt you'll be interested enough to write for details.

By referring to the photograph, it will be seen that the fuel, carried as a *liquid* at a pressure of 135 pounds in the twin cylinders, "A", each containing approximately 23 gallons, is led upwards to the heat exchanger, "B", where the atmospheric heat of the liquid is removed. It then passes through the expansion valve, "C", from which it issues into the evaporator or cooling unit, "D", as a saturated *gas*, at a pressure of approximately 5 pounds. In its conversion from a liquid to a gas, heat absorption is effected and the truck body thereby refrigerated.

The surface of the evaporator is so proportioned that the gas leaves in a perfectly dry state and passes through the heat exchanger, "B", where it absorbs the atmospheric heat of the incoming liquid fuel as above mentioned, and then passes through the diaphragm regulating valves, "E" and "F", where, in two stages, the pressure is reduced to atmospheric. The dry gas then passes to the McCord mixing valve and thence directly to the intake manifold.

The advantages of Petrogas in its dual role of fuel and refrigerant are many. Considered as a fuel alone, it is economical since it is marketed at approximately the same price, on a performance basis, as regular gasoline, and yet is claimed to have many advantages over even the highest test gasoline. It is further economical in that its use results in the total elimination of crankcase lubricating oil dilution, thus effecting a saving of approximately 50% in oil costs, the engineers state.

Being a perfectly dry and homogeneous gas when it enters the manifold, even distribution to each cylinder is claimed and the "hot spot" can be dispensed with, thereby permitting a less expanded charge of gas to be drawn into the cylinders than in the case of a gasoline-air mixture. As this fuel has a final boiling point of 40° below zero Fahrenheit, and becomes a dry gas at higher temperatures, motor starting is never dependent upon a change in mixture, and is, in fact, far easier than with the highest test gasoline, it is pointed out.

Having an extremely high octane rating, the makers state that it can be used advantageously on very high compression motors. Even with motors of ordinary

(*Please turn to page* 56)

THE PROOF OF THE PUDDING

Date of Test—June 4, 1934

Truck left Wayne	11:10 A. M.
Truck returned warehouse	6:00 P. M.
Elapsed time	410 minutes
Engine idle	130 minutes or 31%
Engine under load	280 minutes or 69%
Number of stops made	16
Miles traveled	120
Load carried	5,261 pounds

HOURLY TEMPERATURES

Time	U. S. Report*	Refrig. Body	
11:00 A. M.	85 Deg.	48 Deg.	
12:00 Noon	90 "	42 "	
1:00 P. M.	91 "	44 "	
2:00 P. M.	92 "	46 "	
3:00 P. M.	94 "	46 "	
4:00 P. M.	94 "	46 "	
5:00 P. M.	93 "	42 "	—Truck empty here
6:00 P. M.	89 "	44 "	

* These reports were taken from the top of the Majestic Building in Detroit, and the figures are believed to be from 7° to 10° lower than the temperature at the street level.

What's *inside* a battery makes all the difference in the world . . .

Cutaway cell showing construction of 6 volt Exide Battery.

Storage batteries all look very much alike — on the outside. But look inside an Exide and you see some of the reasons why it is so dependable and extra-powerful, why it has such long life and delivers service at such remarkably low cost.

What you can't see in an Exide is the *experience* that goes into making it — nearly a half-century of experience in building Exides for every storage battery purpose in the world. Railroads have used Exides for forty years. Ships, airplanes, coal mines, telephone companies depend on them. All the accumulated experience gained in building batteries for these and a score of other applications goes into the construction of *every* Exide Battery.

When you buy an Exide Battery, you are assured of the dependability, low maintenance costs and long life which this broad experience alone makes possible. You are assured of an engineering service organization behind the battery which enables you to get out of an Exide all the outstanding value built into it. For economy — why not standardize on Exides?

Exide

BATTERIES

FOR EVERY TYPE TRUCK

NRA

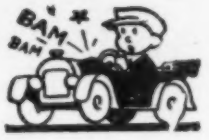
THE ELECTRIC STORAGE BATTERY CO., Phila.

The World's Largest Manufacturers of Storage Batteries for Every Purpose

Exide Batteries of Canada, Limited, Toronto

Say "I saw it in FLEET OWNER"—It Helps!

TROUBLE SHOOTER



(You Ask 'Em — We Answer 'Em)

A department, devoted to correspondence from readers of FLEET OWNER. Any questions having to do with automotive service will be answered in this department. All properly signed inquiries will be replied to by mail and such of them as are believed to be of possible interest to other readers will be published in these columns.

What Is "Excessive Oil Consumption?"

Question: There is one question that we would like to get an answer to, so as to find out how we are lined up in this respect. We notice that in the Question-of-the-Month tabulation on Pistons and Rings, and also to a lesser extent in the one on Spark Plugs, that "excessive oil consumption" is given as the signal for overhauling or otherwise doing work on the motor to remedy the above conditions.

What we would like to know is how much oil has to be used before it is considered as "excessive oil consumption," or to put it another way, how many quarts of oil must be added to a motor between oil changing periods, to make it necessary to work on the motor to correct this trouble?

In our own case, we consider that if a truck uses more than five quarts of oil between changes of 500 miles, then it is time to fix the motor. This applies to all vehicles in the fleet. We are using a nationally-known brand of oil and reclaim it in a reclaimer.—D. H. W., Nashville, Tenn.

Answer: We have never attempted to get opinions on this, but it is a good question. The term "excessive oil consumption" is a very flexible one, of course, and this will depend to a great degree on the type and size of engine in question.

In the first place, the question of speed should be considered. If you will turn back to page 40 of our June issue, you will see an item entitled *"Speed Steps Up Oil and Fuel Consumption,"* which will be somewhat helpful.

Under *average* driving speeds in commercial service, we could arbitrarily state that if a passenger car consumes one quart of oil in 100 miles of driving, some kind of an overhaul job is warranted. In light trucks, this figure could be pared down to about 75 miles. In heavy equipment, including buses, particularly of the high-speed type, with large oil capacities, we hesitate to set up any arbitrary figures.

In our own car, which is a light six, oil does not have to be added, except to the extent of one quart every 500 miles, and the engine has not been torn down for three years. It is well to remember that oil consumption increases with engine speed, as does gasoline consumption.

In old, worn engines, whether the oil is heavy or light does not seem to make much difference, according to latest research on the subject, although in new engines, heavier oils will show less tendency to be consumed. On the other hand, heavy oils will increase *gas* consumption, and you will find the article on page 22 of this issue of interest in this respect.

Let us not try to define "excessive oil consumption," but rather, it would be well to hear what other operators have to say on the subject. When writing, we'd appreciate it if you would mention the type of vehicle in question, and your own ideas as to just what is meant by "using too much oil." The Editor would be grateful for any letters on this subject, *and we mean it!* How many letters will we get?

●

How They "Solved" the Governor Problem

Question: We have installed governors on about fifty of our passenger cars, mainly for safety and economy. We find that when the governor begins to act, the mixture is entirely too rich, and that the economies we had hoped to gain are not actually being realized.

We have been using a popular make of governor in connection with Carter down-draft and Zenith up-draft carburetors. We are at a loss as to how to overcome this difficulty. Can you advise as to some method we can follow to gain the economy and at the same time control the speed?—W. R. P., Atlanta, Ga.

Editor's Comment: The above question was received some time ago and was printed in our March issue, together with a suggested remedy, including smaller carburetor jets and warnings to drivers not to "ride the throttle" down hard after maximum governed speed was reached. The following remarks were subsequently received from the inquirer, which are self-explanatory. Undoubtedly they will interest other readers, inasmuch as they reflect actual experience. Here is how the solution to this problem was worked out:

"You suggested smaller jets; however we failed to mention that we had tried all sizes of jets with the different carburetors and were still unable to get the desired economy when using a governor. What we had in mind was some method of getting the desired econ-

You May Not Believe It!

(But It's True)

THE FACT:

LESS gasoline is consumed when your trucks and buses are operated on concrete roads, than on other types of roads.

THE PROOF:

TESTS made at Iowa State College prove that less gasoline is used on concrete. At a speed of 45 miles per hour, 10 per cent less gasoline was required on concrete than on bituminous-treated gravel, and 17 per cent less than on plain gravel. Tests of other agencies have also confirmed these studies.

H. J. HEINZ CO. Buys . . . . INTERNATIONAL TRUCKS

HEINZ famous "57 VARIETIES" NOW RIDE IN INTERNATIONAL 2-TON AND 3-TON TRUCKS OF PROVED ECONOMY

THE great pure food house of H. J. Heinz Co. has come to grips with hauling costs. They use hundreds of trucks; their problem is nationwide. *They have to know—and the knowledge has led them to International.*

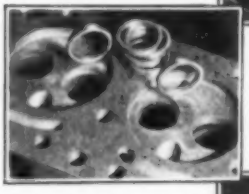
Four years ago H. J. Heinz Co. put eight new trucks of four leading makes on a competitive basis. For seventeen months these trucks worked under exactly similar conditions. At the end of the period, the Internationals showed much the lowest cost of operation. *They had saved 1.4 cents per mile compared with the next best trucks, and 5.7 cents per mile compared with the trucks operating at highest cost.* Additional trucks were bought, further tests were made, and International rose still higher in favor. The result is extensive enlargement of the Heinz International fleet.

H. J. Heinz Co. is one of the very oldest and best-known concerns in American industry. High standards of quality have built its far-flung organization and its reputation. It has now allied itself with the quality performance of International Trucks.

You may not have the same opportunity as Heinz to measure the comparative merits of trucks but the experience of this firm is yours to draw on. Rely on International Trucks. Sizes, ½-ton to 7½-ton. Ask our nearest branch or dealer for a demonstration.

A FEW DETAILS OF INTERNATIONAL CONSTRUCTION

• Replaceable Cylinders: In International trucks the cylinders may be individually removed and quickly replaced with new cylinders of the same size, saving the cost of expensive, unreliable reboring. The engine need not be removed from the truck. The new cylinders actually *renew* the engine — reboring does not. Owners say this feature of advanced design easily adds 50,000 miles to the truck's life.



• Left: Hardened Exhaust-Valve Seat Inserts are a feature long ago made standard international practice. They retard valve seat burning, engine efficiency is retained, and the valves seldom need grinding.

• Right: Removable and replaceable precision-type bearings have long been a feature of international truck engines. These bearings make it possible to replace connecting rod or main bearings quickly, easily, at low cost.

NRA

INTERNATIONAL HARVESTER COMPANY OF AMERICA (INCORPORATED)
606 S. Michigan Ave. Chicago, Illinois

INTERNATIONAL TRUCKS

Say "I saw it in FLEET OWNER"—It Helps!

TROUBLE SHOOTERS' DEPARTMENT (*Continued*)

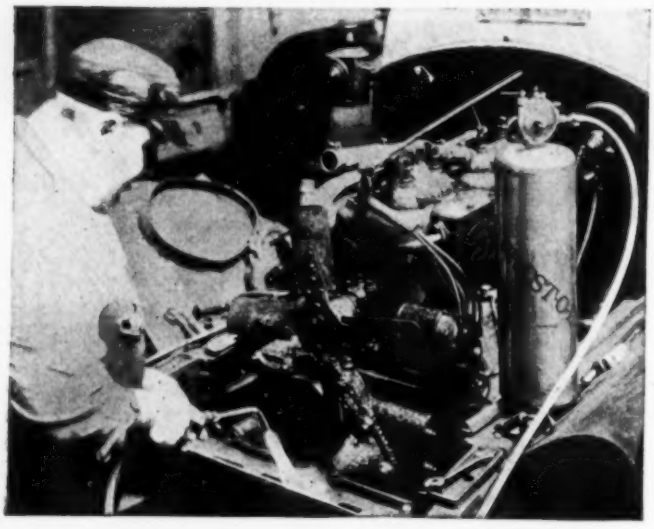
omy, even though the drivers did 'ride the throttle.' Regardless of how much they were cautioned, they continued to depress the accelerator after reaching the governed speed.

"We have since found out that with carburetors with vacuum-controlled power jets, it is only necessary to pipe around the governor to get the proper functioning of the carburetor. On certain other types of carburetors, we have found it necessary to use 'throttle stops' instead of governors, as we were unable to find a method of stopping the waste caused by depressing the accelerator after reaching the governed speed.

"The use of the 'throttle stop' seems to accomplish this, although at the sacrifice of performance. In our fleet, we are not so much interested in performance as we are in economy, and we are applying 'throttle stops' to all our passenger cars and are continuing to use governors and vacuum-controlled carburetors on the trucks. Thus, we feel we have worked out a solution to this problem."—W. R. P., Atlanta, Ga.

●

Some Uses of the Air-Acetylene Torch



IN the truck repair department of a large brewery, the air-acetylene torch is used for many purposes. The illustration shows how this outfit is used for a typical heating operation—loosening a frozen bolt.

The air-acetylene outfit consists simply of a small tank of dissolved acetylene, (such as used to be popular for truck lighting), a pressure regulator, a length of hose and a torch handle, to which can be attached a varied assortment of tips for various work.

The same shop also uses the torch for soldering leaky tanks, radiators, lamps, connections on batteries and terminals, and for soldering all joints on rewiring jobs and tubing repairs.

●

Poor Compression—What Do You Think?

Question: We have a Chrysler 77, 1929 model, that was stored away for two years. Upon putting it back into service, we had to install new gasoline tank, fuel lines and replace all jets in the carburetor, which was overhauled by the local Stromberg representative. All electrical units, timing and valves were checked carefully, the valves being reground.

This car has plenty of speed on the level, but when operated in the city at low speeds it has no power to climb hills. Where it should go over in high, it can barely make it in second speed. This car has since gone about 2,500 miles, but it is just as bad. The oil mileage is very good. Gasoline mileage is also o.k. What could you suggest?—W. K., Lawrence, Mass.

Answer: We believe that this is a case of poor compression, or uneven compression in all cylinders. A car with poor compression can be pretty good on the level roads, but will show up badly on hills. We should also look for a leak in the intake manifold, which would also affect pulling power. If the condenser has not been replaced recently, this might help. The distributor points should separate about .025" and you might try a smaller spark plug gap than what you are at present using. That's about all we can suggest, without having an opportunity of driving the car.

●

Blame the Adjustment—NOT the Steel

Question: One of our 1931 Studebaker coupes has a very pronounced and annoying gear grind in the rear end. The ring gear and pinion have been replaced three times and the car has gone about 15,000 miles. The new gears are quiet until about 3,000 miles have been driven; then they commence to get noisy.

We have been told that the noise is due to the type of steel used in making the gears and that the noise cannot be entirely overcome. Our theory is that the gears are small and made with a steel containing a high percentage of nickel, and that this is the reason why the gears produce the humming noise which cannot be overcome.

However, this explanation is not satisfactory and perhaps the cause of the trouble may be due to improper fitting or alignment of the parts in the rear end mechanism. Is it probable that gears containing a high percentage of nickel in the steel would produce a "ringing" sound, while gears of steel containing less nickel would have less of a ringing sound?—G. D. K., Salt Lake City, Utah.

Answer: Let's not attempt to go into the metallurgical side of the question. It's fairly safe to assume that the car manufacturers *know* what type of steel is best to use. We're not engineering-minded enough to answer questions of this kind.

The fact that your rear-end gears only last for 3,000 miles, leads us to believe that your trouble is due to maladjustment, misalignment or lack of lubrication. We cannot subscribe to your theory about the composition of the steel having anything to do with it.

Our suggestion is to follow closely the correct procedure for adjustment. It is also necessary to check the differential housing, onto which the ring-gear is bolted or riveted. This should be absolutely true and free of run-out. Previous articles in this publication covered this subject very thoroughly. We are also sending you a book entitled "Modern Methods of Rear Axle Gear Installation."

(EDITOR'S NOTE: *While we are at it, we might as well let you all know that the book "Modern Methods of Rear Axle Gear Installation" is perhaps the most comprehensive piece of literature on rear-end gears that we have ever seen. Many copies of this book have been distributed. If you haven't seen it, we'll be glad to get a copy for you, free, gratis and for nothing. Just write a line to the Editor and one will be forthcoming in a few days.—H. C. F.)*

The quartz finger nail (attached to this instrument helps to assure better looking trucks—lower refinishing costs for Quality Baking Company. It makes an impression of known force on a paint film. The diameter of this impression, measured by microscope—enables Du Pont chemists to know *exactly* the hardness of Automotive DULUX.

How hard is HARD?

"THAT'S HARD ENOUGH," says the practical man as he tests a paint film with his finger nail. But is it? Du Pont chemists must know exactly. For degree of hardness has an important bearing on appearance, wearing qualities and other characteristics of a finish. To determine hardness with scientific precision and to provide a standard method of grading hardness, du Pont chemists employ the ingenious device shown here.

This Hardness Tester is one of the instruments used in du Pont laboratories for maintaining the uniform high quality of Automotive DULUX (air drying), the special du Pont finish for trucks. Other instruments check color, drying time, resistance to weather, toughness, thickness, flexibility and general durability of Automotive DULUX. They are part of the du Pont system of Pre-Testing that makes *certain* that every gallon of Automotive DULUX you buy measures up fully to the du Pont standard. They eliminate guesswork and costly uncertainty from the selection of a more durable, colorful and economical finish for your fleet.

For the lasting smart appearance of Automotive DULUX, its greater resistance to weather, gasoline, oil and mechanical injury on the road have made this remarkable finish just that. Truck owners find too that Automotive DULUX can be polished more frequently without wearing through. Bodies and fenders do not need touching up so frequently, when the finish is Automotive DULUX.

Your own refinishing shop or any Authorized Du Pont Refinisher can easily apply DULUX with spray or brush. Let us help you draw up standard DULUX specifications for your fleet. Address E. I. du Pont de Nemours & Co., Inc., Dept. F-7, Finishes Division, Refinishing Sales, Wilmington, Del.

DU PONT REG. U. S. PAT. OFF.

—AUTOMOTIVE—
DULUX
REG. U. S. PAT. OFF.
(AIR-DRYING)

DU PONT MAKES A COMPLETE LINE OF AUTOMOTIVE REFINISHING MATERIALS

Say "I saw it in FLEET OWNER"—It Helps!

READER SAY-SO

(Picked at Random from The Editor's Mail-Bag)

Likes to Read Our Articles

"DEAR Mr. Fischer: I have been using synthetic enamels on our fleet for the past two years with wonderful success, but as you no doubt know, have run up against plenty of obstacles that were rather hard to fathom; so I am always glad to get a hold of any information that will enlighten me on the subject.

"I like to read your articles in FLEET OWNER magazine and was mighty glad to see the one in the June issue on synthetic enamels. Kindly send me all available data on synthetic enamels; also lacquers."—*Albert Crowl, c/o Pennsylvania Power Co., New Castle, Pa.*

●

"One of the Best—"

"I FIND FLEET OWNER one of the best published automotive magazines on the market, especially your follow-ups and current literature. There is no reason in the world why anyone should not be up-to-date with FLEET OWNER as it has the most current and up-to-date news."—*John F. King, Shell Eastern Petroleum Products, Inc., Philadelphia, Pa.*

●

More About Graphited Oils

"WE were very much interested in reading the article on graphited oils appearing in the March issue of FLEET OWNER. We have been using a lubricant of this type in some of our equipment with satisfactory results. So far as we know, ——— is about as satisfactory a graphited lubricant as can be obtained, and we would appreciate any suggestions or recommendations on this subject that you may care to make."—*W. B. Dalton, Traffic Mgr., Nekoosa-Edwards Paper Co., Port Edwards, Wis., operating a fleet of 9 trucks, 4 trailers, 2 tractors and 3 passenger cars.*

He Participates—Do You?

"DEAR Mr. Fischer: Thank you for the latest tabulation in the Question-of-the-Month Department. The one on Spark Plugs has just arrived and I think that it will be very helpful, for it shows that the various operators have very definite opinions and reasons as to when spark plugs should be changed. Enclosed is my reply to the current questionnaire. Thank you again for the big help that FLEET OWNER is in helping us keep up with the latest practices in transportation design and operation."—*Dwight H. Woods, Engineer, Nashville Gas & Heating Co., Nashville, Tenn.*

●

"Consistent" Is Just the Word

"DEAR Editor: We are engaged in revising our present methods of preventive maintenance and would appreciate very much receiving samples of the forms known as No. 325 and No. 326, as mentioned on page 44 of the June issue of FLEET OWNER. The writer will also appreciate being placed on your mailing list to receive FLEET OWNER monthly, if consistent with your present practice."—*E. O. Shryock, Transportation Engineer, Penn Central Light & Power Co., Altoona, Pa.*

●

Wants Back Numbers

"MY check is enclosed for a subscription to FLEET OWNER and I would like this to date back to January, 1934. I am the representative of an oil refining machine manufacturer in this territory and have found previous copies of FLEET OWNER very helpful and desirable. Through your advertising columns I hope to be able to get other suitable merchandise for presentation to the trade."—*E. W. Pennington, Minneapolis, Minn.*

Another Synthetic Inquiry

"DEAR Mr. Fischer: Your article on synthetic finishes in the June issue of FLEET OWNER is highly instructive and entertainingly presented. You mention the availability of literature on synthetic finishes, accompanied by an offer to see that such literature is forwarded to interested readers. May I take advantage of this offer?"—*John E. Godsoe, Supt. of Distribution, Brooklyn Borough Gas Company, Brooklyn, N. Y.*

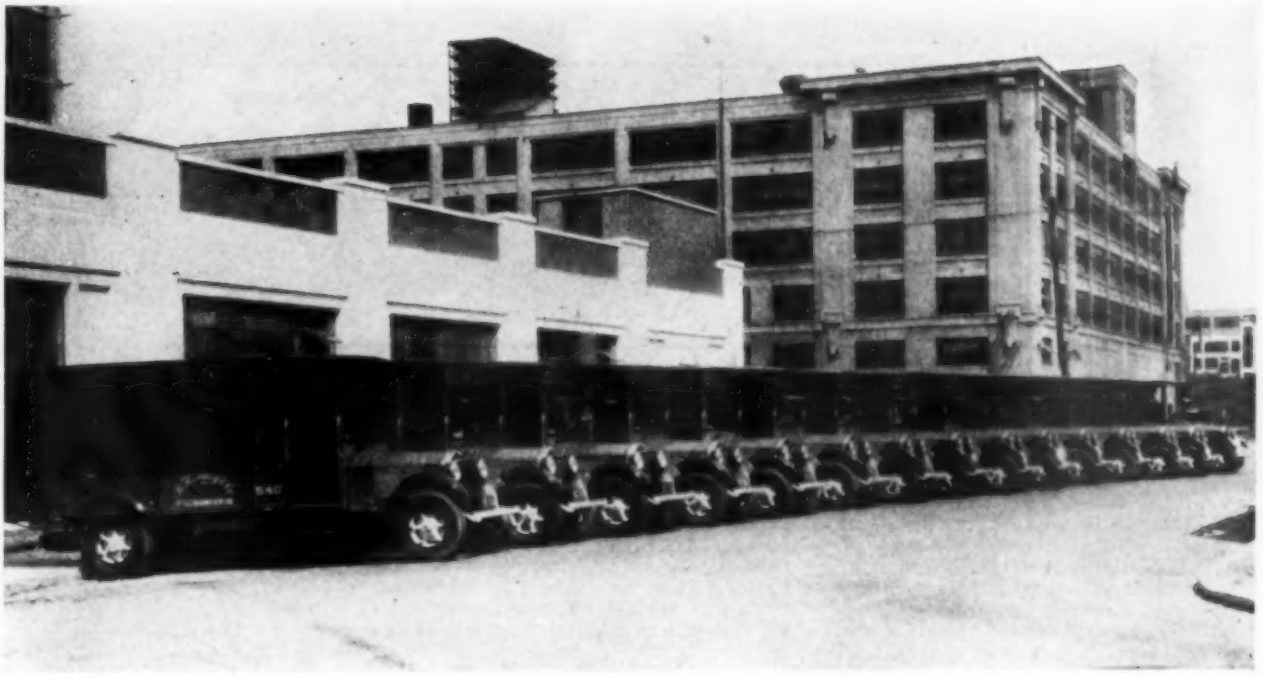
●

More About "Self-Starters"

"DEAR Mr. Fischer: In reading over an old copy of FLEET OWNER (March, 1934 issue), I came across the item about the Hupmobile that started without using the starter. I had a similar experience with a Pierce-Arrow truck which did the same thing, but only when the spark control was moved. This is done, of course because the motor stops slightly past the firing point and one of the cylinders retains a good charge of mixture which is ignited when the spark control is moved and the points are broken. I want to add that I like your book very much and find it very clear and up-to-date. I also want to compliment you on your nice article about the new White 701 and 702 models. I am interested in this job and have written the factory about getting a chassis."—*John Baran, Shop Foreman, Lehigh Gas & Oil Co., Beaver Meadows, Pa.*

(EDITOR'S NOTE: The Hupmobile that we spoke about in our March issue would start when the switch was turned on, *without* moving the spark lever. We are still in the dark as to why this car acted so, unless it happened to be due to the switch, which *made* and then *broke* the contact before it finally snapped into the closed position. If there are any more suggestions, we'd be glad to have them.—H. C. F.)

DeVilbiss Spray-Painting



• for the fleets of *R. H. Macy & Co. Inc.*

34th STREET & BROADWAY, NEW YORK

The trucks of R. H. Macy & Co. are painted with DeVilbiss Spray-Painting Equipment.

New and modern DeVilbiss Equipment produces better finishes, which improve appearance and afford better protection. Economies are effected by reducing time necessary for painting operations and by faster releasing of trucks for duty—resulting in lower maintenance costs.

Near you is an experienced DeVilbiss representative, whose advice on matters of spray-painting can be of real value to you. Send for him now, or write us direct.

Spray-Finishing and Exhaust Equipment—Air Compressors—Hose and Hose Connections—Oil Guns — Other Air-Using Equipment

THE DEVILBISS COMPANY · TOLEDO · OHIO

New York *Philadelphia* *Cleveland*
Detroit *Chicago* *St. Louis*
San Francisco *Windsor, Ontario*

Direct sales and service representatives available everywhere

DeVilbiss

Say "I saw it in FLEET OWNER"—It Helps!

JOHN LAW SEZ:

Recent Court Decisions and other Laws as Reported by National Highway Users Conference and The American Petroleum Institute

IOWA

Acts to Halt Blend Fuel Racket

BOOTLEGGERS aren't going to escape paying motor fuel taxes by blending tax-free products with gasoline if Iowa can do anything about it. A new law applies the 3c. per gallon tax to "all products which alone or combined with other substances are capable of running any internal combustion engine." Under this law, the tax now applies not only to gasoline, but to kerosene, naphtha, distillate, fuel oil, tractor oil and other products which might be used as fuel or blended with gasoline. Consumers who use such products for purposes other than motor fuel can obtain tax refunds, but must unwind plenty of red tape before they get the money. Also they are required to register annually.

•

NEW YORK

New State Gasoline Tax Laws

GASOLINE bootlegging in New York will become more difficult under three new laws signed by Governor Lehman. The bills were recommended by the State Tax Commission. One bill requires wholesale purchasers and sellers of gasoline to keep accurate and complete records, so that shipments of gasoline may be traced. Another increases the penalty for attempts to evade tax payments or to defeat the tax law to a fine of $5,000 or imprisonment for one year, or both. The third law requires the master of any barge, tanker, or other vessel to keep proper records concerning the gasoline shipment in his charge, and that such vessels have the word "gasoline" plainly and visibly displayed on both sides.

•

OHIO

Court Holds Diversion Unconstitutional

OHIO'S law permitting counties to divert as much as 52 per cent of their share of automobile registration fees for poor relief, libraries, and general purposes has been declared unconstitutional by Judge Stanley Struble, of the Court of Common Pleas, Hamilton county. Judge Struble declared, in effect, that revenue from license fees must be applied to road purposes and road purposes only.

•

OKLAHOMA

Local Units Liable for Taxes

OKLAHOMA'S Supreme Court has held that cities, counties and political sub-divisions must pay the state gasoline tax of 4c per gallon, even when the fuel is used exclusively in governmental activities. The decision upheld a district court ruling that the City of Ardmore was liable for the payment of tax on a carload of gasoline purchased in another state and used in the operation of Ardmore's fire, police, and other municipal departments. The city contended that the Oklahoma constitution exempted all municipal property from taxation. The Supreme Court ruled that the legislature had intended to tax all gasoline consumed in the state, except that used in operating farm tractors or stationary engines.

•

PENNSYLVANIA

Certificate Limitations on Equipment

WHERE person secured certificate of public convenience to employ a small Austin automobile in parcel delivery, he could not, without first securing permission from the Commission, operate a larger automobile such as a Chevrolet.—*Merton N. Rhines v. William O. Kanavy, Pub. Serv. Comm., Dock. No. 9655.*

•

RHODE ISLAND

Motor Vehicle Owner's Liability

THERE is no liability imposed on owner of motor vehicle for the negligent operation by his bailee, nor by statute is the bailee made agent of the owner.—*Ford v. Dorcus, Sup. Ct. of R. I., 168 a. 814.*

•

TENNESSEE

Priority Rights in Conditional Sales

STATE'S right as levying creditor for unpaid produce dealers' tax is not superior to the rights of the conditional seller of a truck.—*In re: Hill-Summers Chevrolet Co. et al. v. Gouge et al. Sup. Ct. of Tenn., 64 S. W. (2d) 199.*

•

TEXAS

Rights of Certificate Holders

A CERTIFICATE holder has no monopoly and is not entitled to be protected against competition if convenience and necessity authorizes the Commission to permit a competitor to enter the field. In this instance the Commission granted a certificate for the transportation of more department officers and others connected with the Randolph Field Aviation Service where it appeared its schedule more adequately served the aviation force stationed in that field than did a through bus line joining San Antonio and Houston which passed through Randolph Field.—*In re: Southland Greyhound Lines Inc. v. Railroad Commission of Texas et al., Texas Ct. of Civic Appeals, 3rd Dis.*

•

VIRGINIA

Law Cuts Gas Tax Refunds

A 17 per cent decrease in gasoline tax refunds in Virginia resulted from an amendment requiring claimants to file receipted bills showing taxes paid on gasoline used for tax exempt purposes. Refunds obtained on 11,200,000 gallons, or 4.8 per cent of total consumption amounted to $560,000 as compared with $674,814 in 1932.

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WEST VIRGINIA

Assumption of Debts Unconstitutional

THE Supreme Court refused to reverse its recent ruling holding a legislative act unconstitutional which provided for the state assumption of local debts.—*Parkersburg Sentinel.*

•

WEST VIRGINIA

Commission's Control of Toll Bridge

OPERATOR of toll bridge between West Virginia and Maryland held subject to Public Service Commission jurisdiction in connection with requirement that schedule of tolls charged traffic crossing the bridge be filed. This requirement was held not to directly regulate or burden interstate commerce.—*Public Service Commission of W. Va. v. Harpers Ferry and Potomac Bridge Co. W. Va. Sup. Ct. of Appeals.*

•

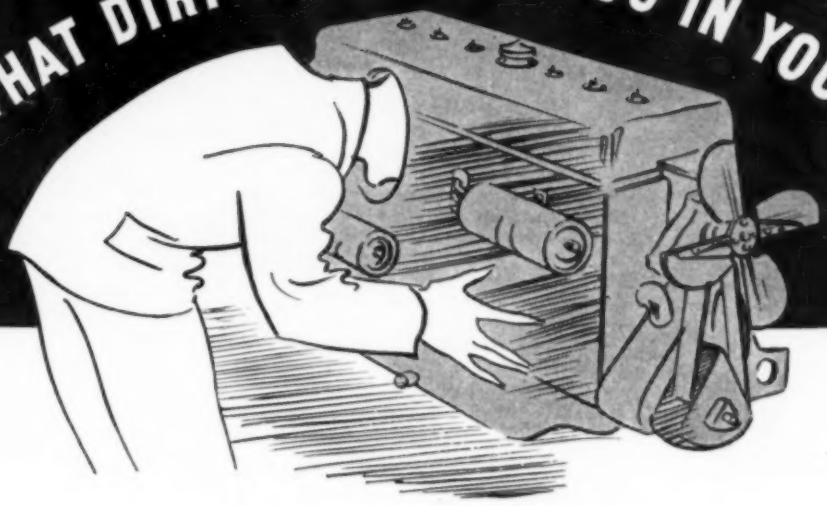
WEST VIRGINIA

Filling Stations Not Chain Stores

GASOLINE stations are not chain stores and are not subject to the chain store tax. This decision, termed "one of the most important rendered in any jurisdiction since the inception of legislation of this kind," has been handed down by the U. S. District Court in southern West Virginia. The state tax commissioner was directed to return to an oil company $240,-173.50 paid, under protest, in chain store taxes. The decision stated that proper service to the public requires a large number of individual units in different locations throughout the state, and that similarity of service resulting from unified management is desirable.

MUST YOU DO THIS

TO SEE WHAT DIRT IS COSTING YOU IN YOUR ENGINE



WHY BE SO STUBBORN ABOUT IT? Why disregard the all too obvious fact that dirt in the air must mean dirt in the engine—unless you keep it out the one efficient way, with an Air-Maze.

When dirt is the primary cause of prematurely worn cylinder walls, hard carbon, burned bearings and contaminated oil, you want an Air Filter that does the job *right.* Something that is 60, or 70 or 80 per cent efficient is *not* good enough. For if you do the job really right you can count on operating savings of as much as a cent a mile—and we have the *facts* to prove it! If you really want to save money, drop us a letter so we can show you how much these facts really mean to you.

Oil Bath Type
Patented in U. S. and Foreign Countries

OPERATION

The dust laden air enters on all sides of the unit in a large but relatively thin vein. An induced spiral and rolling motion forces a large part of the grit and dust to deposit on the oiled surfaces of inner and outer cases. Additional dust is washed out when the air comes in contact with the turbulent oil bath. The semi clean air is then thoroughly filtered while passing through the twelve layer patented filter element, which is kept clean and reoiled by the splash of the agitated oil bath. The clean air proceeds to the motor while the dust is washed downward into the sump.

THE AIR-MAZE CORPORATION
313 Caxton Building • Cleveland, Ohio

AIR-MAZE

The Completely Protective Air Filter for All Automotive Equipment

Say "I saw it in FLEET OWNER"—It Helps!

as WE GO to PRESS

(News of the Truck Industry)

CLOSE to 100,000 trucks in the "for-hire" class were registered under the N.R.A. Trucking Code, up to the time of our going to press—June 28th. Insignia of the Trucking Code are now appearing on trucks throughout the country. Failure to register and to file a schedule of minima for rates and tariffs; failure to comply with the Code labor provisions; or failure to display insignia on "for-hire" vehicles after the respective dates, will lay the offending operator open to a fine, up to $500. Every trucker doing a "for-hire" business must display the insignia on the left side of each vehicle by July 13th. Don't say we haven't warned you.

•

ALTHOUGH the Committee on Uniform Traffic Laws and Ordinances recommended the adoption of the schedule of uniform motor vehicle gross weights, the National Conference on Street and Highway Safety rejected these proposals in the general sessions held at Washington, D. C. during the last few days in May. Length, height, width and axle load provisions recommended by the American Association of State Highway Officials, however, were unanimously adopted. The weight schedule was voted down by 126 to 70, due, it is said, to the fact that there were 51 railroad representatives registered and eligible to vote. Axle loads limited to 16,000 lbs. on high-pressure, cushion or solid tires, and 18,000 lbs., on low-pressure pneumatics, were among the figures that were adopted.

•

A NEW Cummins Diesel, 4-cylinder engine, has recently been installed in a used BJ Mack chassis, by The Missouri Motor Distributing Corporation of Kansas City. This firm has a total mileage of around 150,000 miles per month. They state that the expected economy of this type of Diesel will soon justify the standardization of the same on all of their long-line, heavy-duty truck units.

•

ADVERTISEMENT: Nationally known manufacturer of an essential motor accessory unit, desires connection with sales agent now calling on fleets in the New York Metropolitan area. Liberal commission basis; some established business with larger fleets. Prefer man who can devote some time to calling also on manufacturers who use an air compressor or internal combustion engine in their product. In reply, state representation you can give us; lines now handling; and information of sales character. Write O. W. care Editor, FLEET OWNER, 90 West Street, New York City.

THE Cost Formula—the yardstick by which the adequacy of rates and tariffs filed under the Trucking Code shall be measured—was the subject of discussion in Washington early last month, when more than sixty truck operators and trucking representatives gathered from all sections of the country for a two-day conference. Demands for a simple, flexible formula, yet sufficiently rigid to promote stabilization of rates under the code, were voiced by both large and small operators. Recommendations were turned over to a general committee. When and as this committee develops its final recommendation, the National Code Authority will have to approve of it before it becomes effective.

•

THE Annual Outing of the New York State Motor Truck Association, on June 28, proved an attraction to over 600 fleet operators, truck dealers and automotive merchants of the Metropolitan district. With splendid weather and a smart location (the New York Athletic Club at Travers Island) a good time was enjoyed by all. Many of the latest models of trucks were on the grounds and operators took advantage of the opportunity to inspect them and ask questions. A ball game, athletic events and two excellent meals made the day a memorable one.

•

JUST to remind you that the new law in New York State requiring emergency lighting flares, went into effect July 1st. Your regular source of supply probably has these on hand. Thev can give you all the details regarding the use of same. Whether required by law or not, lighting flares of this kind *should* be carried, in our opinion, as they not only render night repairs or tire changes somewhat easier, but they also contribute to safety, in that they help to eliminate many so-called "parked truck" accidents.

•

THE appointment of Electric Equipment Company of Los Angeles as distributor for the entire line of Bendix Products in Southern California, was announced recently. For a long period this Company has been one of the largest and most successful distributors of B-K equipment, and one of the companies with which it recently merged has been handling Bendix Brakes and Bendix-Stromberg Carburetors. The new appointment followed the Company's consolidation with Pacific Automotive Service of Los Angeles.

PRICE reductions on many low-priced passenger cars, and on some makes of trucks, were announced last month, as you've no doubt read in the newspapers. Many fleet operators took advantage of the savings and invested in new equipment. As it is not likely that there will be further reductions this year, it might be well to check up on your old rolling stock and see just how new, *modern*, equipment will fit into your particular picture. The thing to remember is that almost *any* vehicle that you might select is a "good buy". Don't we always get exactly what we pay for?

•

THE S.A.E.'s Annual Summer Meeting was held at Saranac Lake, N.Y., last month. Many fleet maintenance men attended and found the papers presented, on fleet operation, of genuine interest. One of these, by L. F. Faulkner of Armour, appears on pages 18 and 20 of this issue, for the benefit of those who could not attend. An abstract of another one appears on page 22. Next month we'll try to present another of these interesting papers; we're sure you'll be interested in reading them.

•

THE appointment of W. W. Costello as assistant sales manager of Federal Truck Company was announced last month by J. F. Bowman, vice-president in charge of sales. Mr. Costello will assist in the supervision and direction of Federal's factory field force and will work very closely with their district sales managers. He has had wide experience in the truck field.

•

MAY deliveries of General Motors cars and trucks to large national fleet users exceeded any month on record, topping May of 1933 by over 85 per cent, it is announced by C. E. Dawson, president of General Motors Fleet Sales Corporation, Detroit, Mich.

•

A COMPREHENSIVE manual on universal joints has recently been published by C. W. Blair, 1202 E. Ninth St., Los Angeles, Calif. It is called the "Acme Universal Joint Guide", the purpose of which is to provide complete, accurate specifications, part numbers and pictures of all makes and types of "genuine" universal joints and their respective parts as manufactured to date. It is arranged for quick and easy reference. The leading manufacturers of joints have cooperated in the preparation of this manual, Mr. Blair says.

FRANK MARTZ BUS LINES *Specify* S-W OPEX Truck and Bus Enamels

RIDE THE SCENIC ROUTE

FRANK MARTZ COACH CO., INC.
WILKES-BARRE · PENNSYLVANIA

February 9th, 1934

The Sherwin-Williams Co.
Brown St. & Lister Ave.
Newark, New Jersey

Attention: Mr. Fred C. Pfeifer

Gentlemen:

We have used your Opex Hi-Gloss Truck and Bus Lacquers on our equipment for the last eighteen months, and feel we can state authoritatively that this material produces the finest, most durable and economical finish for Bus work.

Mr. Miller, our finisher, is very enthusiastic about this lacquer, and advises me that he can turn through a unit much faster than with any other material he has ever used. The reason for this is: due to its remarkable building properties, fewer coats are required to get a smooth porcelain-like finish, and the high natural gloss does away with the expensive polishing operation.

We can recommend this finish highly to anyone for truck or bus painting because we know it has met our standards, which we believe to be the highest in our field.

Yours very truly,

FRANK MARTZ COACH COMPANY, INC.

Frank Martz
TREASURER

FM/mk

WHEN a Frank Martz bus rolls in from a long hard run, and the inspector's tag sends her to the refinishing shop . . . it's Sherwin-Williams Opex Truck and Bus Enamels that put her back on the road, trim and shining, in but a few short hours!

Mr. Martz' letter is but one of many certifying to the easy-working, fast-handling and smooth porcelain-like qualities of Opex. If your fleet is troubled with high finishing costs, excessive maintenance costs and short life of finishes, let us have a Sherwin-Williams Finishing Engineer work out specifications for your fleet. This service is yours without cost or obligation and can be had by writing The Sherwin-Williams Co., Dept. 623, Cleveland, Ohio.

The Ideal Bus Finish!

- Dries with lacquer speed—dirt-free
- All colors cover solid in one coat—because of exceptionally high solid content
- High initial gloss—no rubbing required
- Durable, long-lasting finish with controlled chalking
- Ready for masking in two hours after application
- Can be spot repaired quickly and easily

COVER THE EARTH

SHERWIN-WILLIAMS

AUTOMOTIVE OPEX FINISHES

Say "I saw it in FLEET OWNER"—It Helps!

NOTE:
Literature listed here is all "Hot Off the Press" and is guaranteed to be of interest to fleet maintenance men.—H. C. F.

•

171. **Vacuum Spark Control.** Here is a new booklet that explains exactly how the vacuum-operated automatic spark advance unit works on the 1933 and 1934 Chevvies. Since this is a distinctly new method of engine control, every fleet man with Chevrolet cars in his fleet should be interested in this booklet. It also tells the proper way to use governors on cars with this type of spark advance—something which has been quite hazy in many men's minds. Blueprints and other drawings make the booklet interesting. But you must put Number 171 down on our coupon below, if you want it.

•

172. **Marmon-Herrington News.** An interesting publication, issued periodically, that illustrates and describes many different applications of heavy-duty trucks. It also contains a wealth of semi-technical information on the advantages of 4-wheel and 6-wheel drive trucks, facts about load distribution, axles, tracking, turning radius, etc. If you would like to be placed on the mailing list to receive every issue, we'll see that this is done, free of charge. Just indicate Number 172 on the coupon. Here's hoping that you'll find this as interesting as you find FLEET OWNER—or more so.

•

173. **No More Stuck Starters.** That's a promise that sounds pretty good. It is made by the manufacturers of the "Charter Drive" who have just issued a special booklet for the fleet service superintendent. It explains all about this late development in starter drives, gives listings and installation instructions. It also shows exactly how to make various starting motor tests, including r.p.m.-test; lock-torque-test; armature-tests; etc. A free copy of this book can be had by listing Number 173 below.

174. **For Greater Fuel Economy.** It is well known that many automotive vehicles waste from 15% to 30% of the fuel supplied, due to improper carburetor adjustment, faulty timing, etc. This loss runs into many millions of dollars annually. But you've heard this story before. Exhaust gas analysis and subsequent tune-up routine is about the best way to remedy such conditions. You've also heard that one before. But we don't believe you've seen the *latest* booklet on this subject. It tells how exhaust gas tests can now be made *on the road*, as well as in the shop. Mention Number 174 and the booklet is yours. It answers a lot of questions that you may have had in mind.

•

175. **Facts About Tin-Plated Pistons.** There, in five words, is the title of an interesting folder which tells practically everything you want to know regarding the latest development in pistons—tin-plating. Just in case you forgot—tin plated pistons can be fitted with half the regular clearances, and still not bind or score; they also eliminate costly "break-in" periods. Don't overlook this new opportunity to lower your maintenance costs. We'll help you by obtaining the folder, if you but mention Number 175.

•

176. **Free Safety Manual.** This is a 48-page book that tells how to prevent accidents, save money, and build good-will for your fleet. It tells how to organize under the Safety Award Plan and how to get free awards for your drivers. And there's no catch to it either. The book will be sent without obligation, to any fleet operator—anywhere. If you doubt it, just put down Number 176 on the coupon, and see for yourself.

•

177. **Brake Trouble Shooting.** That's only one of the subjects covered in this Brake Reliners' Manual. It contains in fact, 124 pages, chock full of information on relining, adjusting and trouble shooting. Any type of brake and any system of braking. And you'll find it completely illustrated with many drawings and photographs. This valuable brake manual, designated as Number 177 on this page, comes to you through the courtesy of the copyright owners, without cost or obligation.

WHAT DO YOU READ?

HERE'S a hand-picked assortment of literature that is offered to you entirely without obligation.

We've even made it easy for you to get it. Fill in the coupon below, mail to the Editor, and let us do the work. We'll ask them to send it at once and not to bother you with salesmen, either.

•

178. **Facts About Trailer Axles.** A leading axle manufacturer has recently prepared some "common-sense" literature about the part good axles play in trailer economics. Since trailer performance depends to a great extent on the axles used, this literature should be of universal interest. Number 178 brings it, free, of course. They say "A trailer is no better than its axles." Are they right?

•

179. **A Generous Sample.** How "generous" is generous? How "black" is black? These are two things you can learn by including Number 179 on our coupon. The sample is a supply of paint. You can have any color, providing it's black. It's a new heavy-duty black, with a gloss-like sheen, which can be thinned out, three for one. Oh, yes; you'll also get a sample of lacquer thinner, with your sample of black, but unless you are intimately connected with a fleet of cars, trucks or buses, please don't ask for it. If you are, it's free.

•

180. **It is the Law!** Legal advice is costly, as a rule. When you want to run your trucks, buses or trailers into other states, you don't have to consult a lawyer or transportation expert. Not if you have a copy of the latest "Truck and Trailer Size and Weight Restrictions." This is a real handbook that includes every State in the Union. To make it official, each set of state laws is printed right in the book, and countersigned by a prominent authority of each state. There's not a line of advertising in this book and it's free, believe it or not. Convince yourself by asking for Number 180.

The Editor, FLEET OWNER, ...1934
90 West St., New York, N. Y.

Kindly send me without obligation, the following free books mentioned in the.....issue. (Literature will not be sent unless firm name is given.) Order by number.

....

....

Firm Name .....

Address .....

City and State .....

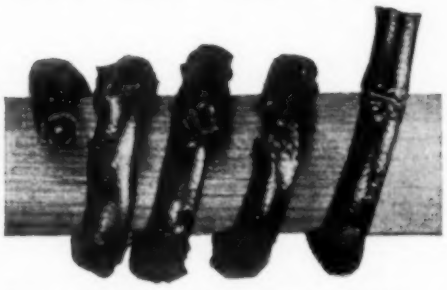
Your Name ....Position.....

Mr. Fleet Owner—
You, too, can easily prove the superiority of the new PACKARD "FOUR-FORTY" ignition cable!

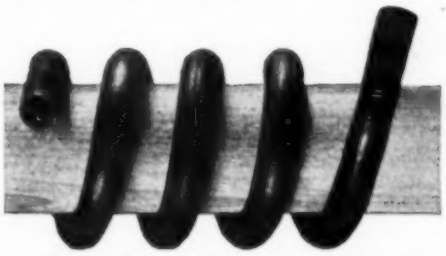
THIS WAS OUR TEST

(1) Hot Oil . . . . . 24 hours
(2) Oven Heat . . . 76 hours
(3) Hot Oil . . . . . 24 hours
(4) Salt Water . . . 24 hours
(5) Oven Heat . . . 15 hours

THIS WAS THE RESULT



Every known make of cable was tested, not only once but many times. Above is the average result—cable completely "shot." Similarly, these cables could not stand up against "FOUR-FORTY" in a series of electrical and dielectric tests.



A secret-formula inorganic-base compound gives the new "FOUR-FORTY" its amazing powers of resistance. Here is the "FOUR-FORTY" as it came through the tests that destroyed other cables. Its dielectric properties are equally outstanding.

ALL over the country the comment is, "that new Packard 'FOUR-FORTY'—there's a *REAL* ignition cable for you!" All over the country fleet owners are telling themselves that again Packard has proved its leadership—again Packard has aided the transportation industry by introducing something new—something finer.

HERE'S HOW YOU CAN TEST IT

You don't have to take our word for it, or even the word of other successful operators. *Test it yourself!* Equip only one unit with "FOUR-FORTY"—check its performance carefully—and learn by actual experience how it will eliminate at least one out of every three ignition cable replacements!

BALANCED CHARACTERISTICS

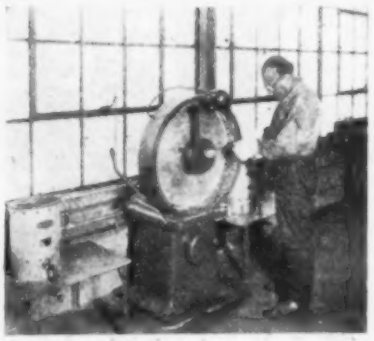
It's easy enough to produce a cable with one outstanding feature, such as resistance to heat—but it remained for Packard to make a cable with "balanced characteristics." From *every* standpoint—both in the matters of dielectric and resistance to corona, oil, age, moisture, heat, etc.—Packard "FOUR-FORTY" is unquestionably the world's finest cable. See your jobber at once and begin to get *better performance* at *less cost* with Packard "FOUR-FORTY." Packard Electric Corporation, Warren, Ohio.

Packard
REG. U. S. PAT. OFF.
TRADE MARK

THE STANDARD WIRING EQUIPMENT OF THE AUTOMOTIVE INDUSTRY

Say "I saw it in FLEET OWNER"—It Helps!

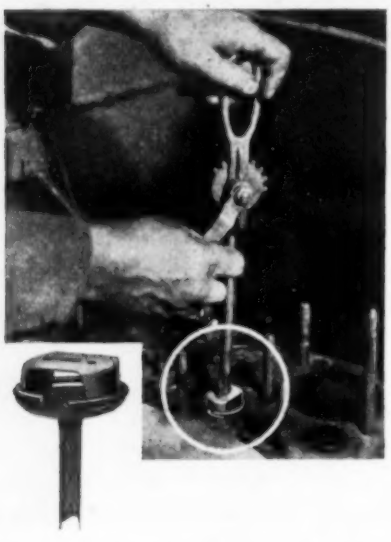
for ROAD *and* SHOP



For Grinding Ford Valves Easily

A NEW valve holder that snaps on to the edge of the valve head and grips it with ample clearance to the motor block, is announced by Star Products, Inc.

The valve holder, illustrated here, can be used with any standard valve



grinding tool, whether mechanical, electrical or hand-operated. This tool is recommended by the makers to be used instead of a rubber cup, which was up to the present time, the only way in which Ford valves could be gripped for the grinding operation.

It is claimed that no matter how badly the valve head or seat may be worn, the valve holder will grip the edge of the valve head without scraping on the top of the block. For further particulars address Star Products, Inc., 15105 Darwin Ave., Cleveland, Ohio. Mention of this publication will be appreciated.

•

Free Literature on Bronze-Welding

BY reason of recent important advances in the use of the oxy-acetylene bronze-welding process, The Linde Air Products Company, 30 East 42nd Street, New York, N. Y., has found it necessary to bring out a new edition of its valuable eight-page pamphlet entitled. "*The Progress of Bronze-Welding.*" Similar in form to previous editions, it contains a comprehensive and instructive story of bronze-welding in all its phases.

The subject matter is arranged so that procedures for work on cast iron, malleable iron, steel and wrought iron, copper, brass and bronze are each discussed in a comprehensive manner. A special section is devoted to the building-up of worn surfaces, which is one of the most important uses of bronze-welding today. Plentiful illustrations help to portray what can be accomplished in the various industries by the use of this process.

In order to satisfy a growing desire on the part of many to know more about the metallurgical aspects of bronze-welding, the Linde Air Products Company has added another five-page pamphlet to its technical literature. This pamphlet, entitled "*The Principles of Bronze-Welding,*" discusses in an authoritative way the compositions and strength characteristics of bronze-welding rods, the underlying theory of the flowing of bronze-weld material, and certain important elements of welding techniques.

Both of these pamphlets are sure to be of great interest to welders, engineers, technical men and executives. Copies will gladly be furnished upon request, if you mention this publication.

•

New Low-Priced Tire Groovers

BECAUSE of the success of its previous model tire groovers, using the cartridge type of heating element, the Kwick-Kut Manufacturing Company has developed a new low-priced line, using a similar heating unit.

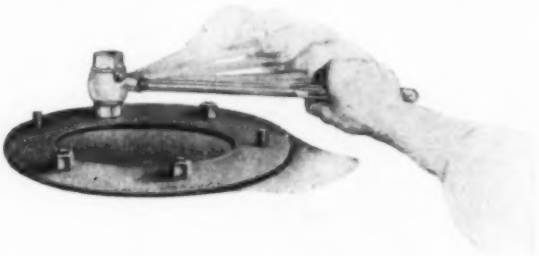
The new line is called the "Tire Jockey" and all models sell for under ten dollars. Using a 150-watt element, the new groovers are claimed to be hotter and faster.

These groovers are furnished complete with Kwick-Kut blades and sharpening stones. For full particulars write to Kwick-Kut Mfg. Co., 3821 Arsenal St., St. Louis, Mo. When writing, you'll mention FLEET OWNER, won't you?

•

Super Heavy-Duty Ratchet Wrench

HERE'S a *real* heavy-duty ratchet socket-wrench that we've just had called to our attention. It works on a quick, straight-ahead ratchet movement, and the socket is not removed from the nut (for either turning on or off) until the operation is completed. An instantaneous shift reverses the ratchet.



Three handles and an assortment of sockets will take care of the average sizes encountered in automotive work—and this includes heavy-duty sizes up to 1½-inch bolts, making the wrenches suitable for industrial work, in addition to motor vehicles.

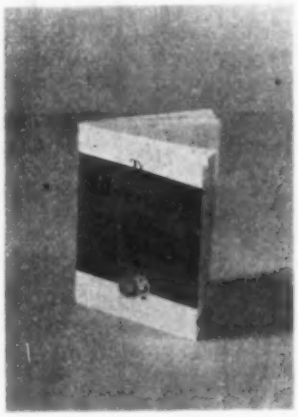
For such heavy work as tightening spring clips, axle-shaft nuts, truck and bus rims, body bolts, cylinder head nuts, steering gear and motor mountings, these wrenches will be found handy. Before this wrench will break, it will *bend*, the manufacturers declare, and the pawls are built exceptionally heavy to stand any abuse.

Further particulars, sizes and prices, may be obtained by writing to Greene, Tweed & Co., 109 Duane St., New York City. Mention of FLEET OWNER will help to identify your request.

NEW STUFF *for* ROAD *and* SHOP (*Continued*)

Free Safety Manual—Get Yours?

THE Safety Manual illustrated here is a 48-page book that tells fleet operators how to prevent accidents—how to save money—and thus build good-will for your fleet.



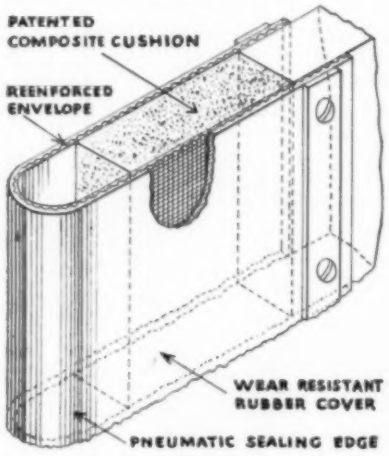
It also gives information about the Silvertown Safety Award Plan, which furnishes free awards for your meritorious drivers.

Free copies of this book are available to any fleet owner who will write for them on his own letterhead. Address Dept. T-90, The B. F. Goodrich Rubber Co., Akron, Ohio. The Editor will be glad to take care of your request, also. Write either, just as you please; there's no obligation, either way.

●

New Door-Shoe or Bumper

A COMPOSITE safety reenforced door-shoe or bumper, designed to provide a soft, yielding and sealing cushion for railroad cars, subway cars trolley cars, buses, and every type of automatic or semi-automatic door, has just been patented and is now manufactured by The Manhattan Rubber Mfg. Division of Raybestos-Manhattan, Inc., Passaic, N. J.



The new type door-shoe or bumper is soft and yielding and is valued for this safety feature. Passengers who are accidentally wedged by a closing automatic door will not be injured.

The door-shoe or bumper is furnished in a variety of sizes to meet the requirements of existing equipment. Detailed data will be furnished on application.

Handy Perfection Air Cleaner

THE air cleaner illustrated here can be easily installed on practically any engine and has been designed to supply perpetually efficient air cleaning performance, according to the makers.

It passes the incoming air through a dense fog of oil, which washes out all dirt. Service attention is reduced to the simple monthly operation of removing a reservoir and dumping out the dirt. The initial supply of oil lasts indefinitely. Such are the claims of Handy Governor Corporation, Detroit, Michigan, the sponsors of this piece of equipment.

They especially recommend this cleaner for power equipment working in locations where heavy dust, entering through the carburetor, would otherwise shorten the life of the engine. They will be glad to send full details on request, if you but say the word.

●

Toledo Valve Springs and Keys

THE Toledo Steel Products Company, manufacturers of valves, announces a new line—Toledo Valve Springs, engineered for the requirements of modern high compression motors. They are finished as specified by car manufacturers and where necessary, are marked with two contrasting colors to show which end of the spring rests on the valve seat.

Toledo valve springs are made of highest quality wire, containing the proper type of steel to fit each individual spring specification. All wire is held to strict analysis and carefully checked for flaws. Springs are accurately coiled on automatic machines and heat-treated to car manufacturers' specifications.

In addition to valve springs, The Toledo Steel Products Company has also developed Toledo Valve Stem Keys. These keys are likewise of high quality steel, precision manufactured.

Complete information on both valve springs and valve stem keys may be secured by writing The Toledo Steel Products Company, Toledo, Ohio.

●

Water-Trap for Spark Plug Cleaner

A WATER-TRAP, which will remove moisture from the air line and facilitate operation of the spark plug cleaner, has been introduced by AC Spark Plug Company, Flint, Mich.

Water in the air line is usually caused by condensation, and the "trap" was developed in order to take care of this condition.

The device, which can be easily installed on the air line, should be located close to the spark plug cleaner as shown in the illustration. With thousands of spark plug cleaners in use today, the trap is regarded as an important contribution to the fleet service field.

●

Accelerator-Starter for Fords

THIS device, designed for installation on Ford V-8 cars, combines the starter and accelerator pedals. Pressure on the accelerator engages the starter and when the engine starts, the circuit is automatically broken.

Should the engine stall, starting is accomplished by pressing on the accelerator, as before. Besides these advantages, the makers claim that it reduces over-choking, excessive starter use and saves fuel. For details address Hoof Products Co., 166 N. Franklin St., Chicago, Ill.

NEW STUFF *for* ROAD *and* SHOP (*Continued*)

Sunnen Announces New Spring Tester

TO their well-known line of automotive service equipment, the Sunnen Products Company of St. Louis has added a new Valve Spring Tester.

Manufacturers in the last few years have been increasing valve spring pressures. Many of the older cars now in service are running with springs too weak for efficient motor operation. Many times a motor will develop valve trouble, especially at high speeds, and the mechanic may suspect weak springs.

In the past, the mechanic has had no way to test springs other than taking them out of the motor—a job that required just about as much time as a valve grinding job. And if the springs checked OK, the mechanic had wasted a lot of time.

Now, however, with the new Sunnen Spring Tester, shown here, the mechanic can check all valve springs in the motor in just a few minutes and know they are right. The tester shows the exact spring pressure in pounds in the place the spring is working—so there is no danger of making a mistake.

Because the tester is inserted under the spring and retainer and pressure applied to them, there is no possibility of dropping locks while testing a spring. A spring holding fixture, furnished with the tester, enables the mechanic to test clutch or valve springs when they are out of the car. A scale makes it easy to compress the spring to a predetermined length according to the manufacturers' specifications.

The Sunnen Spring Tester will test springs in any motor except Fords and V-type motors with the blocks set closer than 90 degrees. For trouble shooting, motor tune up, and valve jobs the tester fills a need that has existed for years. For further information, write to the Sunnen Products Company, 7911 Manchester Avenue, St. Louis, Mo.

•

Perfex Oil Re-Refiner

THE feature of this oil re-refining apparatus, according to the manufacturer, is its simplicity, as it is entirely automatic and requires a few minutes' time per day.

The Perfex Oil Re-Refiner is two feet square by six feet high and its extension cord plugs into any 110-volt lighting socket, making a simple installation. There are no pumps, fans or motors.

Crankcase drainage run through this machine will be relieved of all dilution, acid, carbon, water, sludge and road dirt, and the remaining product will be a full-bodied oil, the manufacturers state. We are also told that the filtering compound used in this machine is similar to that used by packing houses for the refining of lards and shortenings.

This outfit is large enough to take care of the oil of large fleets of cars, yet small enough to effect savings for the smaller fleet operator, according to The Perfex-Oil Re-Refining System. Centropolis Station, Kansas City, Mo., to whom all inquiries should be addressed. You'll mention FLEET OWNER when writing, won't you?

•

Graph-O-Lyte Motor Conditioner

GRAPH-O-LYTE Motor Conditioner and Protector are now put up in 1 gallon, 5 gallon, ¼-Drum (15 Gal.) and ½-Drum (30 gal.) for fleet owners.

The vehicle used in GRAPH-O-LYTE Motor Conditioner does not contain diluents, animal or vegetable fats, but is scientifically compounded of 8 different ingredients, each with a specific function to perform, the manufacturers state.

It will prepare any motor, new or overhauled, regardless of size, for heavy-duty service in 2 to 3 hours time, and is sold on a "Performance Guarantee" basis, acording to the makers.

This is *not* a new product, but one that was developed in 1928 to overcome lubrication problems, incident to the changes that took place in motor design when speeds, compression ratings, H.P., etc., were greatly increased.

It is claimed that reconditioned motors can now be prepared for heavy-duty service in one-half the time formerly required with perfect safety, also that drivers do not need to nurse the motor along during its first 1000 miles of use.

Write to Grapholyte Mfg. Co., Evansville, Indiana, for further information, mentioning the name of this publication, if you please.

New Hose Resists All Solvents

A NEW type of paint-fluid hose which, it is said, successfully resists all commercial solvents, has just been announced by the Electric Hose and Rubber Co., Wilmington, Delaware.

The tube of this hose is made of a newly developed compound possessing all of the strength and flexibility of rubber, but being free of the usual tendency to soften, slough off, break apart or disintegrate when in contact with oils or solvents. As a result, this fluid hose eliminates the faults found with some hose that slough off and permit particles of rubber to mix with the paint and spoil the finish, it is claimed.

Couplings will hold better in this hose because the special composition tube stays in place and maintains a firm grip on the coupling at all times, the makers state.

This new hose is of well-known braided and moulded construction. It is extremely light and flexible and its cover will resist rough wear. It is made in ¼", 5/16", ⅜", 7/16", and ½" inside diameter and can be furnished in any length up to 500 ft.

•

"Runwel" Automotive Packings

"AN asbestos packing into each strand of which graphite grease lubricant has been forced hot under pressure before the strands are braided or twisted up into final shape." That is the way the manufacturer of "Runwel" automotive packings describes his product, used for many years in the automotive and industrial fields.

These packings are made in square braided form, or in twisted form. The square braided type is available in any size needed for automotive work, while the twisted type is made in sizes from 1/16 to ½-inch in diameter.

The friction caused by hard, unlubricated packings will cause an unnecessary amount of power waste,

will necessitate frequent and expensive repackings and will do untold damage to shafts and journals. Runwel packings are claimed to overcome these disadvantages. Write to Greene, Tweed & Co., 109 Duane St., New York City, for further details and fleet discounts. Mention of FLEET OWNER will be appreciated.

NEW STUFF *for* ROAD *and* SHOP (*Continued*)

New Power Prover Tuning Tools

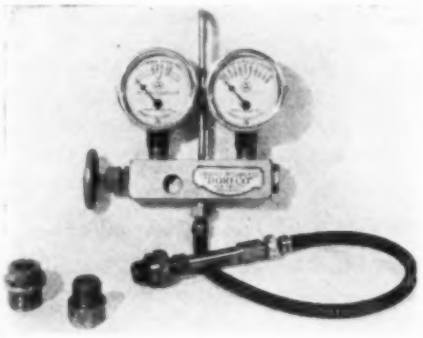
TWO new "Power Prover" tuning tools, illustrated here, are announced by Cities Service Company, 60 Wall St., New York, N. Y.

The mileage tester, when used with an r.p.m. indicator, or revolution counter, enables the mechanic to test gasoline mileage under actual operating conditions in the garage—thus eliminating road tests, it is claimed.

This device consists of a special flow-meter and stop-watch. Instantaneous flow constriction provides accurate registering of fuel consumption of any motor, for a given period, at a given speed.

The compression leakage gauge measures the compression of the engine and indicates whether or not rings are worn, valves not seating properly, etc.

It tests the ability of cylinders to hold compression by means of the admission of compressed air in carefully and accurately measured quantities.



These new tools, in combination with other Cities Service Power Prover equipment, previously described in this publication, help to make this routine of real value to the operator. For further details regarding this service, address Cities Service Power Prover, Room 702, 60 Wall St., New York, N. Y.

•

Rubber Now Used in Putty

"PLASTIKON" putty, a compound similar in appearance and consistency to ordinary painter's putty, with the important exception that it is combined with rubber, is a new product being marketed by The B. F. Goodrich Rubber Company, Akron, Ohio.

Not only are most of the advantages of ordinary putty claimed for the new compound but the use of rubber is said to yield additional benefits.

Of unusual interest is the fact that this putty requires no mixing, since it contains practically no oil. It effectively resists corrosive chemicals and fumes and, because of its rubber content, offers very high resistance to moisture. Another property, peculiar to this putty, is its high degree of adherence to steel surfaces.

Plastikon Putty is being marketed by Goodrich in 15 pound, 75 pound, and 225 pound cans as well as in small pint cans.

•

Combination Soft-Face Hammer

THE Basa Hammer, illustrated here, is now available with any combination of faces, including rawhide, babbitt, copper, etc. This tool meets the demand for a hammer that will strike a blow without injuring the surface struck.

It is ideal for tire-work, finishing and assembling operations, piston-pin fitting and other jobs around the shop that require a drive fit.

Basa Hammers are available in five different sizes, weighing from 1¼ to 6 pounds. The faces have diameters of from 1¼ to 2¾ inches. The types of faces are fully interchangeable with each size of hammer, so that any combination of faces can be made in a few minutes. Replacement faces can be obtained at moderate cost, making the hammer a life-time tool.

For further particulars, sizes, list-prices, etc., write to Greene, Tweed & Co., 109 Duane St., New York City. Mention of FLEET OWNER will be appreciated.

•

Testing Welders and Their Welds

ANYONE concerned with the hiring of welders will be interested in the recent publication by The Linde Air Products Company, 30 East 42nd Street, New York, N. Y., of a 24-page illustrated booklet entitled *"The Testing and Qualification of Welders."* The purpose of this booklet is to outline simple tests for measuring the ability of welders, the first of the six essential steps in every procedure control for oxy-acetylene welding.

It is pointed out that welding technique differs somewhat with the materials to be welded and with the type of joint used, so that it cannot be assumed that a man who can weld excellent joints in aircraft tubing can also do as well in 20-in. steel pipe.

Separate sections of the book discuss in detail the fracture test, the bend test, the tensile test, and the observation test.

•

Hoof 7-Pin Tumbler Locks

THESE special door-locks, designed for replacement on Ford, Plymouth, Dodge, De Soto and Chrysler cars, are claimed to be drill-proof, shear-proof, pick-proof and furnished with a key that cannot be duplicated.

A feature of the new lock is the tumbler, which requires a cylindrically-cut key. The lock has a hardened steel shell and center. There are seven tumblers located in a circle around the plug, some mushroom or spool type, and placed at every eighth turn of the lock.

The manufacturers will be glad to send further details of construction, circulars, prices, etc. on request. Address Hoof Products Co., 166 N. Franklin St., Chicago, Ill.

•

Empire Rawhide Mallets

THESE rawhide mallets are made from quality Water-Buffalo hides and have a moisture-proof finish, the handles being made of selected straight-grained hickory.

They are made in five sizes, weighing from 4 ounces to 24 ounces. For further particulars and prices address Greene, Tweed & Co., 109 Duane St., New York City. You'll mention FLEET OWNER when writing, won't you?

QUESTION *of the* MONTH

"By far, one of the most valuable departments to be found in any automotive publication. Every fleet man should be delighted to cooperate."—A Reader

Some of the Interesting Replies to the Auxiliary Oil Question (No. 44):

Uses Graphited Oils for Rebuilt Engines

"WE are using a top-cylinder graphited oil for the first filling of oil in rebuilt engines, for breaking-in purposes. We also treat our first filling of gasoline after rebuilding, using about four ounces to 5 gallons of gas, and then two ounces to each 5 gallons.

"We find that it is almost impossible to hurt a rebuilt unit when oils of this type are used freely when breaking in. As to disadvantages, we cannot say that we have ever experienced any.

"Do such lubricants do the work which their makers claim? I think they do in most cases. The one we are using now decreases the formation of carbon. We cannot say that they affect engine operating temperatures either way.

"As to any general lowering of operating costs, we have not used these lubricants in a general way in our fleet to be able to tell, but think from personal experience in our own personal car, that it should be noticeable."—*N. W. Glass, Supt. Auto. Equip., Indiana Service Corp., Ft. Wayne, Ind., operating a fleet of 64 trucks, 3 buses, 3 passenger cars and 8 other vehicles.*

●

Uses Break-In Oils on New Jobs Only

"BREAK-IN oils are used by us in both crankcase oil and gasoline, on new jobs only. We find that they free up the motors and give positive lubrication until the motors are limbered up.

"As a rule, lubricants of this kind seem to do the work which their makers claim; they also allow engines to operate at cooler temperatures. These are used on new jobs for the first 1,000 miles only. We can't say that we have noticed much of an improvement in operation or lower costs as a result of using same."—*R. M. English, Foreman, Ohio Power Company, Newark, Ohio, operating a fleet of 34 trucks, 33 passenger cars and 12 other vehicles.*

●

Has Merit, But We can't Prove It

"WE have used a graphited lubricant both in crankcase oil and in gasoline, in all motors, continuously, but the results obtained were very intangible. We discontinued the use of this on account of the fact that there was nothing to show in the way of dollars profit. No doubt these products have merit, but it is difficult to show any actual savings.

"As to doing the work which the makers claim, this has also been hard to prove. However, they do decrease the formation of carbon somewhat; they do not seem to affect gas or oil consumption; and the other effects mentioned in the questionnaire are hard to determine.

"Graphited lubricants, if used properly, have merit. But how can a fleet superintendent prove to the fleet owner that the use of graphite at its present cost is justified? We have discontinued it until we can prove it saves us money."—*C. V. Wells, Mgr. Auto Dept., Pillsbury Flour Mills Co., Minneapolis, Minn.*

●

Graphited Oils Have Proven Very Satisfactory

"ON new and rebuilt equipment and on out-of-town vehicles, we use a graphited lubricant in both crankcase oil and in the gasoline. We find that this gives us more power, better mileage on gas and makes the equipment stand up better generally.

"We feel that this lubricant does the work which its makers claim and that the cost of same justifies its continued use. If used properly, it does not affect the formation of carbon and tends to lengthen engine life in general and to give better gasoline mileage; also makes the engine run cooler.

"We use one ounce in every 5 gallons of gas and about two ounces to each quart of oil in the crankcase. This particular lubricant has proven very satisfactory in lengthening the life of the motor and keeping down maintenance costs."—*P. O. West, Shop Foreman, Yellow Cab & Baggage Co., Topeka, Kans., operating a fleet of 13 trucks, 17 taxicabs and 2 passenger cars.*

●

Uses Break-In Oils Only; Good Results

"ONLY on new and rebuilt motors do we use break-in oils. These are poured into the crankcase. We fill the crankcase, keep it full and change it at 300 miles. We run it another 1,000 miles with break-in oil and then change to regular oil.

"We find that this practice eliminates seizures, reduces run-in time, permits closer fits on rebuilt jobs and consequently more mileage. Lubricants of this kind, in our opinion, do the work which their makers claim and their cost justifies their continued use, in our opinion.

"As to their effect on carbon formation, we have found no noticeable difference. Engine life between overhauls, however, is increased by 10 or 20 per cent. Gasoline consumption is slightly decreased and the motors seem to run cooler. They allow increased intervals between overhauls and this results in lower per-mile repair costs."—*H. G. MacLeod, Asst. Truck Supervisor, Colonial Beacon Oil Co., Everett, Mass., operating a fleet of 150 trucks.*

MORE "LOW-DOWN" *on* AUXILIARY OILS *(Continued)*

We THINK It Pays to Use Auxiliary Oils

"TOP cylinder oils are used in our fleet, being placed right into the gasoline and used continuously. As to advantages, we find that they provide improved valve and ring action, more freedom from sticky valves and better compression. The disadvantage is their extra cost when not supplied in gasoline purchased.

"We *think* that the cost of such lubricants justifies their continued use by us. They do not have any noticeable effect on carbon; they tend to lengthen the life of piston rings and valves; they also tend to decrease gasoline and oil consumption.

" We use top cylinder oils in proportions of 1 gallon to every 300 gallons of gas. We expect that we are making some savings, but it is hard to say exactly."—*Geo. A. Hogg, Supt. of Trans., Scranton Electric Co., Scranton, Pa., operating a fleet of 30 trucks, 51 passenger cars and 18 other vehicles.*

●

Can Fit Parts to Closer Tolerances

"BOTH top-cylinder oil and break-in oil are used by us, in overhead oilers and also in crankcase oil. We use them for breaking-in new and rebuilt engines and find that we can fit parts tighter without danger of seizing.

"Practically speaking, we believe that such lubricants do the work which their makers claim, and their cost seems to justify their use as above. We find that they tend to lengthen the periods between overhauls, although they seem to increase the formation of carbon. They also seem to decrease gasoline consumption.

"Top cylinder oils prevent sticky valves, which lengthens the time between valve grinds. They also lengthen the lives of piston rings and bearings."—*W. H. Pierce, Foreman, Sutter County Repair Shop, Yuba City, Calif., operating a fleet of 34 trucks, 15 passenger cars and 19 other vehicles.*

●

(Please tear out and mail to The Editor, The Fleet Owner, 90 West St., New York City)

Question No. 46—Truck Bodies

How many of the following truck bodies do you operate? (Please state how many of each in your fleet)

Closed Vans	Dump Bodies	Refrigerated Bodies .....
Open Top Vans.....	Open Express	Insulated Bodies .....
Stake Bodies	Milk Tanks	Others .....
Platform Bodies	Gas or Oil Tanks.....	.....

What is your principal source of supply on truck bodies? (Please Check Below)

☐ Truck Manufacturer	☐ Body Builder	☐ Build Our Own
☐ Trailer Manufacturer	☐ Tank Builder	☐ Others .....

What materials of construction do you prefer for any of the following bodies?

Closed Vans	Dump Bodies.....	Refrigerated Bodies.....
Open Top Vans.....	Open Express.....	Insulated Bodies.....
Stake Bodies.....	Milk Tanks	Others .....
Platform Bodies.....	Gas or Oil Tanks.....	.....

What type of insulation do you prefer for closed bodies, if used? .....

What type of paneling? ..... Other construction materials?.....

Have you had any experience with all-aluminum bodies? .....

If so, is the weight saving afforded by aluminum worth the extra cost?.....

Please list any advantages or disadvantages with aluminum bodies from your own experience.....

.....

Do your trucks operate at or near legal gross load limitations? .....

If so, would you increase the loads if state highway laws permitted it? .....

Would all-aluminum construction permit heavier loads in your own operation?.....

What is the average life of your truck bodies?..... Do they have any scrap value?.....

Do you do your own body repairs?..... Or, is this work farmed out?.....

Remarks .....

.....

We operate .....Trucks; .....Buses; .....Pass. cars; .....Trailers

Note: If you cooperate with us and fill out this questionnaire, you will be entitled to a tabulated report covering all of the answers.

Swap your Maintenance experience with other fleet operators in this easy, convenient way. We do the work. You get the benefit.

Name of Firm .....

Address .....

City and State .....

Your name .....*Position*.....

F. L. FAULKNER *on* "VEHICLE DESIGN" *(Continued)*

accessibility of parts for both minor and major servicing.

Those of us who operate large scattered fleets depend a great deal upon local service for maintaining same, and as a result, the purchase of equipment by makes is influenced a great deal on account of local service. Due to this fact, several makes of vehicles, of the same capacity, will be purchased, which further complicates maintenance standards. The more nearly vehicles in the same capacity ranges are alike as far as appurtenances and accessories are concerned, the more simplified the servicing becomes.

We do not advocate that all types of vehicles should be so closely standardized that they would lose their identity, but we do feel that if many items of design were standardized among the vehicle manufacturers, there would be a marked improvement in servicing costs.

The scope of our study was so large that it will be impossible to present all the data in connection with same and keep this paper within the prescribed limit of the Society.

I will outline briefly the suggested standards on items on which we have tentatively agreed.

1. **Front Bumpers:** Type—channel bar. Height from ground, light trucks and passenger vehicles seventeen inches; heavy trucks twenty-three inches.

It is obvious that for maximum protection, we should have a uniform bumper height for all types of vehicles. However, it is deemed impractical.

2. **Radiator Guards:** Many operators recommend and use radiator guards on certain class of their equipment, but it is the concensus of opinion that radiator guards should not be furnished as standard equipment.

3. **Radiator Grills:** Non-essential and contribute to higher maintenance cost without any return for the investment; not recommended.

4. **Chromium Plating:** There has been a definite trend on the part of many manufacturers to chrome-plate all trim parts, such as bumpers, head lamps, head lamp tie bar, radiator shell, radiator grill, hood side doors, cowl beading, windshield frame, etc. It is generally agreed among the operators contributing to this study that bright parts should be held to a minimum of head lamp, door frames and radiator shell.

5. **Radiator:** Type—tubular; mounting—rubber; fill opening size, 2½ inch. Location—inner left-hand side. Provision should be made in sod pan to permit of collecting drainings from radiator without waste, as many operators use permanent type anti-freeze solution.

6. **Engines:** The oil filler pipe should be a minimum of two inches in diameter, located on the left-hand side of engine. The oil gauge should be of the stick type and located on left-hand side with sufficient accessibility to assure accurate gauging.

It has been suggested that oil sticks be provided with a flared collar which fits snugly to crankcase when in running position to afford better seal against oil leakage and to prevent foreign matter from working in around the stick.

Crankcase drain opening should be ¾ inch minimum; plug type; with recess for ⅝ inch square-head wrench.

The oil pressure regulating valve should be located on the left-hand side with external adjustment where same is readily accessible. Flywheel timing mark should be visible from the front right-hand side of engine.

Exhaust manifold flanges were given very serious consideration but due to variation in design we are offering no recommendation as regards their standard. It is hoped, however, that designing engineers will give this matter serious consideration from a standpoint of stud diameter and available gasket area.

7. **Clutch Housing** should be provided with external fitting that is accessible from under right side engine hood for lubricating clutch throw-out bearings.

8. **Transmission:** Filler opening. Location—Left side. Transmission case at lubricant level. Size—minimum ¾ inch diameter. Type—elbow. Drain opening, size ¾ inch minimum; plug recessed for ⅝ inch square head wrench.

9. **Rear Axle:** Filler opening should be minimum ¾ inch diameter located center of cover at lubricant level. Plug should be recessed for ⅝ inch square head wrench. Drain opening located at bottom center. ¾ inch diameter minimum plug; recessed for ⅝ inch square head wrench.

10. **Cabs:** Two-man type. Mounting—three-point suspension. Ventilation: top of cowl in center, minimum. Dimensions: inside height 50 inches. Inside Width: minimum 50 inches. Inside back to dash, 36 inches. Height: floor to top seat cushion, 13 inches. Height: floor to steering wheel, 22 inches. Door width: minimum, 31 inches. Door hinge at front.

11. **Instrument Board:** It is recommended that all control devices be removed from the steering wheel and the instrument board be equipped with the following: speedometer, oil pressure gauge, heat indicator, ammeter, gasoline gauge, choke control, throttle control and light switch. It is further recommended that high and low beam lights should be controlled by foot switch, located at left of clutch pedal.

12. **Gasoline Tank:** Two recommendations are necessary for location of tank, due to wide application of passenger type chassis for commercial work. Light trucks and passenger vehicle tanks to be located at rear of frame. Large truck tanks to be located under cab seat. Fill openings to be of elbow type, minimum opening two inches diameter. Location, left side outside cab. Stand pipe to be baffled. Tank cap to be bayonet type. Tank drain ½ inch plug.

13. **Lubrication Fittings** should be of the snap-on type.

14. **Air Cleaners:** An adequate air cleaner of the oil bath type should be standard equipment on all types of vehicles.

15. **Oil Filters:** An adequate oil filter of the cleanable type should be standard equipment on all types of vehicles. Location left side engine; accessibly mounted for cleaning.

16. **Horn:** A horn of electric type, located under engine hood, is recommended. We are not prepared at this time to make any recommendations as to rating of a horn for general commercial use.

17. **Windshield Glass:** Shatter-proof safety glass should be standard for all cab windshields.

18. **Windshield Wipers:** All cabs should be equipped with two wipers. Method of drive—optional. Vacuum preferred.

19. **Rear View Mirrors:** Type of bracket—tubular. Length adjustable with minimum of 12 inches.

20. **Front Fenders:** The conventional type of front fender appears to be generally satisfactory. However, many operators are requesting that a coach type fender

(*Please turn to page* 54)

Data on Heavy-Duty Batteries

AN eight page booklet, "Specifications and Data for Bus and Truck Service Batteries" has just been published by The B. F. Goodrich Rubber Company, Akron, Ohio, and is now available upon request.

The booklet describes the new Goodrich line of truck and bus service batteries introduced a short time ago, gives the guarantee and adjustment policies, specifications and replacement data on batteries for all models of busses, trucks, fire trucks, taxis and tractors, as well as complete drawings showing assembly plans for each type of service.

●

New Catalog on Lathes

A NEW general catalog of 72 pages, showing the complete 1934 line of South Bend Lathes, attachments and tools has just been published.

Any reader interested may obtain a copy of this new "Catalog No. 94" without charge or obligation, by writing to the Technical Service Dept., South Bend Lathe Works, South Bend, Indiana and mentioning the name of this publication.

●

Free—Automotive Cleaning Handbook

THIS book is, in effect, a practical "how-to-do-it" book on the subject of all types of cleaning in the automotive field.

It includes such subjects as radiator cleaning, car washing, steam-gun cleaning, cement floor cleaning, parts cleaning and others frequently encountered in the fleet service station.

A copy of this book may be had free for the asking. Address: the Editor, FLEET OWNER, 90 West Street, New York City. We'll see that you get a copy promptly and without obligation.

●

Valve and Guide Catalog is Offered

THE Toledo Steel Products Company, manufacturers of Toledo valves, valve guides, valve seat inserts and water pump parts, announces a new 1934 catalog.

This catalog contains an alphabetical list of cars with the proper Toledo valve and valve guide numbers for each make and model. In addition, it contains a master numerical list, a numerical dimension chart and a progressive dimension chart for both valves and guides.

A copy of the new Toledo Valve and Valve Guide Catalog may be secured by writing the Toledo Steel Products Company, Toledo, Ohio.

●

Fan Belt and Radiator Hose Catalog

PRESENTING a wealth of data for everyone in the automotive service field, a 1934 fan belt and radiator hose catalog has just been published by The B. F. Goodrich Rubber Company, Akron, Ohio, and is now available upon request.

The catalog contains 32 pages of fan belt and radiator hose specifications for passenger cars, trucks, buses and tractors, listed alphabetically and covering practically every piece of automotive equipment now in use.

. . . *replacements are now*

PERMANENT!

NO LONGER need you figure on *regular* and *costly* fuel and oil line replacements! Weatherhead has completely revolutionized fuel line performance with the new Oil and Gas-Proof Non-metallic Hose.

Expensive lay-ups due to fuel line trouble play havoc with schedules and maintenance. End these worries once and for all! Install Weatherhead hose lines *now!* Your jobber will show how it can be done quickly—efficiently . . . . and *save replacement cost* and *continued expense.*

THE FITTING AND HOSE CANNOT SEPARATE: Notice how the outside nut crimps the sleeve portion of the fitting *tight* against the hose, making the assembly a positive guard against loosening. This is a patented feature found on no other fitting.

GAS AND OIL-PROOF HOSE: Weatherhead hose is *not* rubber, but a specially compounded flexible product which is guaranteed gas and oil-proof. The compound scientifically incorporates a heavy duty fabric giving the finished assembly wear-ever qualities. Weatherhead lines stay in service!

Don't fiddle around with costly replacements.. use the coupon below to get the facts on *permanent* fuel and oil lines. We can help you save considerable on maintenance cost.

THE WEATHERHEAD CO., 620 Frankfort Avenue, Cleveland, Ohio

I am interested in the new Gas and Oil-Proof Fuel and Oil Lines.

Name _____

Address _____

Jobber's Name _____ *Units* _____

WEATHERHEAD

PIONEERS OF TROUBLE-FREE FLEXIBLE TUBE AND FITTINGS

While Vellumoid is a Fibre Packing, not all Fibre Packings are

VELLUMOID

Vellumoid is thoroughly saturated, and has just the right amount of compressibility. It is always ready for service, making tight Oil, Gasoline, and Water Connections which *stay tight*.

Stock Vellumoid ready-cut gaskets for the cars, trucks, and tractors you service most often, and sheet Vellumoid, from which you can quickly tap out or cut out any gasket desired.

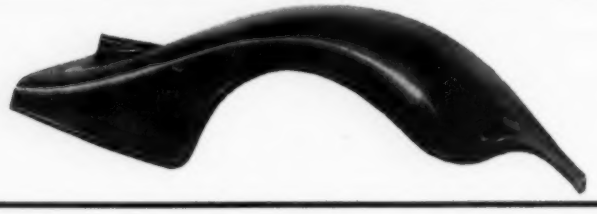
Ask your Jobber

VELLUMOID
THE REAL REPLACEMENT GASKET MATERIAL

THE VELLUMOID CO., Worcester, Mass.

your parts jobber carries

fenders



WHY should you get smaller parts from this convenient source of supply—your parts jobber—and overlook the fact that he can also supply your fender needs?

Jobbers carrying Fostoria Fenders for Ford and Chevrolet as well Dodge and other commercial fleets are located in every community. Write for catalog and prices.

THE FOSTORIA PRESSED STEEL CORPORATION
Dept. O-7 Fostoria, Ohio

GENUINE **Fostoria Fenders**

THE WORLD'S STANDARD REPLACEMENT FENDER

How to Select Automotive Equipment

(*Continued from page* 16)

the logical one to select, all other things being equal.

All of the above, of course, is based on the assumption that you have kept accurate and detailed cost records. Otherwise the procedure in each classification would be little more than a "wild guess" or a "leap in the dark."

Although the methods described in the foregoing paragraphs might appear quite complicated or involved in reading, analyzing and digesting them, they are really quite simple when put into actual operation. The writer has tried to make this very important and highly technical matter reasonably clear in the brief space alloted.

●

F. L. Faulker on "Vehicle Design"

(*Continued from page* 52)

be made optional on the part of the manufacturer.

21. **Wheelbase and Frame Length**: This subject has been reviewed again among the operators contributing to this discussion and it has been generally agreed that the present S. A. E. C. A. dimensions are satisfactory. It is hoped, however, that a larger number of manufacturers will incorporate the present C. A. standard dimensions into their present line of motor vehicles.

22. **Battery Location:** There is considerable variance of opinion as to the proper place to locate the battery. If under the floor board, it should be on the right-hand side; if external, left side frame. Wherever mounted, to be accessible and as far remote from muffler pipe as possible.

23. **Spare Tire Mounting:** The problem of satisfactorily mounting the spare tire has perplexed the industry for years. We are unable, at this time, to make any definite recommendations. It is pretty generally agreed, that on light duty equipment we could carry the spare tire in a fender well, left side of the vehicle; and on the heavier type truck, resort to the under side type of carrier to the rear of rear axle. In fender well type mounting, more attention should be given to proper support of tire to prevent excessive maintenance at this point. On the underside type carrier, the weight of the tire must be taken into consideration as most road changes are accomplished by one man. The hinged type appears to more nearly meet this requirement.

24. **Tail Light and License Bracket Mounting:** Combination tail light and rear license bracket should be located external of left-side frame rail, six inches from end. It is hoped the designing engineers will give some consideration to the length of the present license plates in mounting this bracket to prevent interference with the plates when removing spare tire.

Many States require both front and rear license plates and it has been noted that some manufacturers make no provision for carrying front plates. Suitable brackets should be provided to carry front plates either on front bumper or head lamp tie bar.

25. **Location of Tool Box:** Provision should be made for tool compartment under cab seat at the right end of tank.

26. **Front Axle Width and Turning Radius:** Many operators are demanding wider front axles. We have no recommendations to make regarding what this should be. However, I am mentioning these items as ones that should be given further consideration. The major

difficulty seems to be brought about in oversizing tires beyond the manufacturer's standard.

To obtain a measure on how far out of line the industry was in their present day offerings as compared to what the operators have requested, a questionnaire was prepared and sent to the majority of the leading manufacturers. This questionnaire was limited to the service items and those pertaining to the safety of the vehicle. Unfortunately we did not get in sufficient returns to make the data fully representative; however, it is apparent there is considerable room for improvement.

It is hoped this review of the situation will accomplish at least two things. First: a more unified opinion on the part of the operator as to his actual needs. Second: a better understanding and a more sympathetic attitude on the part of the manufacturers to the operator's requirements.

(EDITOR'S NOTE: This article was presented first at the Summer Meeting of the Society of Automotive Engineers, held last month. Acknowledgement is hereby made and due credit must be given to the Society for its forethought in selecting such an important subject. The returns to the questionnaire that was sent out to truck manufacturers are too involved to permit reproduction here, but if you are interested, we understand that the S. A. E. has prepared them in mimeographed form and they can be obtained by writing to the Society of Automotive Engineers, 29 W. 39th St., New York City.)

●

Uses Winter Oils in Summer Operation

(*Continued from page* 22)

driven at a sustained speed of 65 miles per hour for 100-mile test periods with a low viscosity index 10-W oil giving the lowest viscosity at the high operating temperatures which would be experienced with any of the commercial 10-W oils. All of these cars of eight makes operated satisfactorily on this 10-W oil (in August, 1933).

A 1933 eight-cylinder car was then put on the road using 10-W oil, with instructions to the driver to operate at maximum speed as much of the time as possible. At the end of 1,500 miles the engine was still satisfactory but the test was then changed to a 1934 car of the same make as it was felt the information would be of more value. The test was discontinued at the end of 6,000 miles without any difficulty having been experienced with the 10-W oil.

Two eight-cylinder cars were then put on the track on a 14,500-mile test on a schedule intended to represent the most severe owner-driver service. These cars were driven 600 miles per day, including 90 miles per day at 80 miles per hour, made in three 30-mile test periods. At the end of this test, the bearings, cylinders, pistons and rings were in excellent condition. In addition, many other test cars have been driven under all types of service conditions with 10-W oils without experiencing difficulty.

The use of lower viscosity oils means a greater consumption of oil, regardless of the operating conditions. At high speeds these low viscosity oils may give lower miles per gallon of oil than the owner might anticipate. In using these low viscosity oils, the oil level in the crankcase should be checked frequently and the level should be maintained. However, the lower viscosity oils, on account of causing less friction, will give more miles per gallon of gasoline, and the total cost of oil plus gasoline is usually less with low viscosity oils than with high viscosity oils.

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COLLOIDAL GRAPHITE

A number of oil and blending companies are now engaged in the marketing of colloidal-graphited oils as an addition product for general lubrication.

Service Managers desirous of fortifying their regular motor oils with this valuable adjunct lubricant are urged to contact these companies or have their regular oil supplier furnish them with this type lubricant.

Colloidal graphite when added to regular motor oil forms on friction parts a smooth slippery graphoid surface. Oil wets graphite much more readily than metal, the possibility of oil film rupture being therefore reduced to a minimum. Should there occur a break in the film, which may happen in extreme cases of temperature and pressure, the graphoid surface serves as an efficient secondary lubricant safe-guarding the rubbing parts from metal-to-metal contact.

Colloidal-graphited crankcase and top cylinder oils are not only valuable during the assembly and run-in period but also throughout the life of the engine.

This company will be glad to furnish, on request, information regarding your nearest suppliers.

dag COLLOIDAL PRODUCTS

ACHESON COLLOIDS CORPORATION

Founded (1908) as ACHESON OILDAG COMPANY

PORT HURON, MICHIGAN

To Analyze Safety Glass Practice

(*Continued from page* 30)

facturers;

Martin Schreiber, Public Service Coordinated Transport; H. C. Mougey, General Motors Corp.; and G. McCain, Chrysler Corp., representing purchasers of safety glass as users;

Burton W. Marsh, American Automobile Association, representing the general public;

Alfred Devine, Registry of Motor Vehicles, Massachusetts, representing governmental agencies;

A. N. Finn, Chief, Glass Division, National Bureau of Standards, representing independent specialists; and

Maxwell Halsey, Traffic Engineer, National Bureau of Casualty and Surety Underwriters, representing insurance interests.

William F. Little, of the Electrical Testing Laboratories, was appointed chairman of the technical subcommittee. This group met on June 14, in New York, for their first meeting.

Among the organizations represented at the meeting were: Aeronautical Chamber of Commerce of America, Inc.; American Ceramic Society (Glass Division); American Railway Association; American Society for Testing Materials; American Transit Association; Cellulose Plastics Manufacturers' Association; Eastern Conference of Motor Vehicle Administrators; Electrical Testing Laboratories; Underwriters' Laboratories, Inc.; National Bureau of Casualty and Surety Underwriters; National Society for the Prevention of Blindness; Safety Glass Association; Society of Automotive Engineers, and the National Bureau of Standards.

Groups invited, but which were unable to send representatives were American Automobile Association; American Motorists Association; Motor Truck Association of America; National Association of Engine and Boat Manufacturers; National Association of Motor Bus Operators; National Association of Mutual Casualty Companies; National Safety Council, and the U. S. Navy.

●

Motor Fuel Keeps Truck Bodies Cool

(*Continued from page* 32)

compression, however, high efficiency is obtainable through its almost perfect combustion. This, in turn, is a decided factor in reducing maintenance costs, as it is now known that the wear on cylinder walls and on valves is less due to abrasion than to chemical deterioration of the metal caused by incomplete combustion, the engineers tell us.

The advantages of this type of gas as a refrigerant are strikingly obvious since the refrigeration effect is obtained as a by-product and at no cost whatever. Maintenance cost in the system is reduced to an absolute minimum as there are only a few valves to consider and no moving parts, the makers state.

It should be noted in connection with this system that the amount of refrigeration which is created is in direct proportion to the quantity of fuel consumed by the motor and is equivalent to 180-185 B. T. U's. per pound of fuel.

On runs where the motor is under load or partial load for the greater part of the time, an excess of refrigeration may be produced, but such excess may be controlled thermostatically in a simple manner. On runs where many stops are made, where the doors of the refrigerator compartment are opened a number of times, and where the motor is idle for long periods, the refrigeration is still adequate, as will be seen from

the performance chart of the Loewenstein truck on June 4th, 1934—a typical record. This chart is shown in the box on the first page of this article.

And now if you're interested in getting full particulars regarding this latest development in truck refrigerating systems, we're sure that the makers are ready for you. You can write for details, to McCord Radiator & Mfg. Company of Detroit, or to the Editor, who will be glad to handle your request in our usual prompt manner. If you write McCord, mention of this publication will serve to identify your inquiry.—H. C. F.

●

Graphited Lubricant Breaks-In Diesel Jobs

THE "breaking-in" of new and reconditioned motors has always been considered a serious problem because it is a well known fact that the potential life of a motor depends, to a great extent, upon the treatment it gets during its initial tryout.

During this period it is almost impossible to prevent oil film disruption, resulting in increased friction and heat, which in turn causes further expansion of parts and decreases clearances.

Unless undue care is exercised, until all working parts are properly lubricated, there is always danger of scored cylinder walls or wrist pins, stuck rings or pistons, or burned-out bearings.

To avoid the possibility of damage, drivers are generally instructed to more or less "nurse motors along" until they are thoroughly freed up. Any carelessness on the part of the driver can easily destroy thousands of miles of potential life or even make it necessary to completely recondition a motor at the very start.

This condition has become more pronounced since compression ratios, speeds and horsepower have been increased.

Here's a view of the fully motorized barge, whose three Diesel engines were broken in after overhaul, in record time.

To overcome the problem, many special running-in lubricants have been put on the market, most of which depend upon a diluent for reducing the viscosity of the motor oil in the crankcase so as to better get into close clearances. The use of colloidal graphite has been more recently resorted to, in conjunction with special high-quality lubricating oils, and with products of this nature, a new or reconditioned motor can be "conditioned" in a very short time, for fast driving with perfect safety.

An example of one incident in which a rapid break-in was necessary, has recently been called to our attention. Although not entirely within the field served by this publication, it will undoubtedly command some interest,

A STARTER DRIVE THAT DOES NOT STICK

CHARTER DRIVE is used by fleets because it does not stick, and because it does not chew flywheel starter gears.

It gives real insurance to the fleet operator, preventing expensive delays due to stuck starters. A driver cannot "rock" a truck, especially when loaded. Charter Drive ends delays and attendant costs caused by starter sticking on the road.

Many fleets install Charter Drives on trucks that develop chronic "sticking" with other types of drives, thus eliminating this trouble and often saving shop time and delays otherwise necessary. They find that a Charter Drive will work satisfactorily on most flywheel starter gears that have to be replaced unless a Charter Drive is used.

We have an impressive list of national fleets that are using Charter Drive. Write for this list and for more information on this improved and time-tested drive that does not stick. No obligation. Write today.

Charter-starter-Drive New Type

Improved by a new double-coil, double-hook spring giving five times the life and strength.

One-piece Pinion

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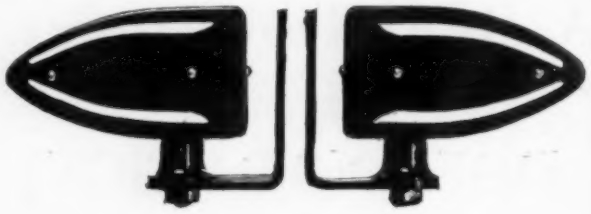
Piston Pins - Tru-Cushon and Standard Clutch Plates - Charter Drive



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Smoke is sufficiently annoying and costly to the operator of (any motor vehicle) a bus without the penalties that legislation may impose. Periodical exhaust gas analyses made with the Cambridge Exhaust Gas Tester while running on the road will give positive data for adjustment which will not only stop the expensive smoke nuisance but will also result in maximum economy and power. Because this instrument will withstand road shocks and pointer does not waver or jump it is just as readable and accurate on the roughest road as it is in the shop.

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Send for full particulars

due to the severity of the job in question and the fact that there were *three* Diesel engines to be handled. Here is the story, as it was passed on to us:

The Leathem-Smith-Putnam Navigation Company operates on the Great Lakes and in the Chicago River, a completely motorized barge for hauling sand, gravel, stone and similar products. This barge, known as *Material Service*, illustrated here, represents an investment of $460,000 and has a carrying capacity of 2,200 tons, which is equal to approximately forty carloads of bulk materials.

Its self-loading equipment, including the A-frame, is collapsible and the vessel is equipped to take on water ballast, so that it can pass under bridges of standard clearance in the heart of Chicago, without causing delays or interference to land traffic.

It operates night and day (24 hours) and can load and unload 2,200 tons of material, and can travel a distance of 68 miles in 24 hours. It is equipped with three Diesel motors; two heavy-duty motors for propelling the boat and one motor for running the 204-KW generator.

One of the propelling engines of the motorized barge, broken in with colloidal-graphited lubricant, in record time.

Last Spring, all three of these Diesel motors were completely overhauled, new cylinder liners, pistons, wrist pins, connecting rods, etc., being replaced, at an approximate cost of about $5,000.

As the "breaking-in" of motors of this type presents the same problem, if not more so, than is presented n the "breaking-in" of the ordinary internal combustion motor, the owners were influenced in testing the claims of break-in oil manufacturers, because they had a large contract to fulfill and were desirous of getting the boat into service as quickly as possible. Of the many lubricants submitted, Graph-O-Lyte Motor Conditioner was selected.

The results of this test will undoubtedly be of interest to many fleet operators, who heretofore have been somewhat dubious regarding the use of colloidal-graphited oils. We commit a breach of good ethics by mentioning the name of the lubricant tested, simply for the purpose of including *facts;* and not with the intention of providing publicity, puffery or "write-up". Here is a quotation from the chief engineer's report:

"All motors were freed up in a few hours' time and we encountered no scuffing or seizing of pistons or

liners. To date we find that all bearings are running unusually cool and we are experiencing a saving in both lubricating and fuel oil. We are also using this break-in lubricant in our other Diesel, which drives a 204-KW generator, which has been running practically night and day for a period of two months. I know of no Diesel motors on the Great Lakes that get such a work-out as ours, and they are performing so well that we shall continue to use this type of lubricant indefinitely."

The chief engineer, who has been connected with Diesel motors practically all of his life, says that he never would have believed it possible to break-in motors such as these, in the short space of time allotted, if he had not supervised and seen the job done himself.

The breaking-in of these Diesel motors is of extreme interest, first because of the size of the motors themselves, and secondly, because Diesel motors generally run much hotter than gasoline motors.

Each of these motors requires two barrels of lubricating oil in the circulating system, necessitating a considerable quantity of the break-in oil. Thus 30 gallons are needed for the three motors, based upon the ratio of one pint for each gallon of motor oil.

The advantages of colloidal-graphited lubricants have been previously pointed out in this publication. Colloidal-graphite, combined with a vehicle so compounded that it will find its way into close clearances, such as in the above-mentioned case, is being found of universal use, in that it will furnish lubrication to all moving parts and minimize the possibility of metal-to-metal contact. Thus, in as little as two to three hours' time, a new or reconditioned motor can be freed up, to the point where it is safe to be put into service, without the attendant danger of seizing, burn-out, scoring, etc., during what is ordinarily known as the "breaking-in" period.

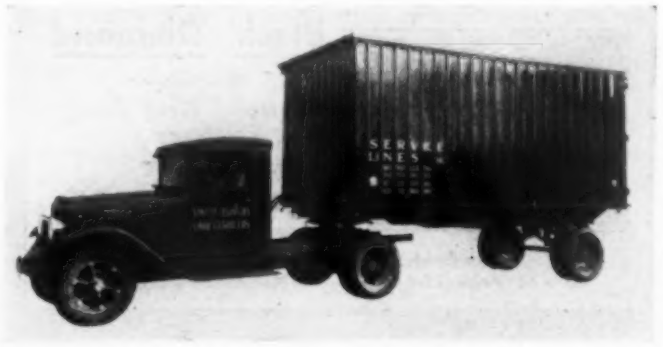
●

A Freight Body in Pressed Aluminum

THE principle of corrugation as a means of stiffening a thin sheet without adding materially to its weight is quite familiar in the common cardboard carton and in the sheet-metal roof. With a few refinements, the same principle has been applied to truck body walls and roofs. The result is a type of construction that approaches the ultimate in lightness and low cost of fabrication for a given material.

But light weight is as much a matter of material as of design. Assume that corrugated or ribbed construction has been settled upon as the best means of solving a specific dead weight problem. To carry out the weight saving program to the final degree, a metal of the highest strength-weight ratio should then be employed.

The semi-trailer body shown in the accompanying cut is one of the first corrugated bodies built of aluminum. The aluminum alloys used for the side and roof panels



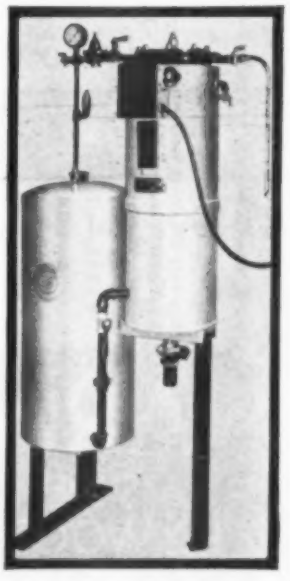
GOOD OIL GETS DIRTY.... BUT IT DOESN'T WEAR OUT

THE NEW SKINNER
STREAM-LINE OIL FILTER

Removes All Dirt from Crankcase Oil... Restores Its Lubricating Effectiveness

GOOD oil does not wear out or lose its lubricating value in use—it merely becomes dirty and contaminated with non-lubricating impurities. Actual experience in hundreds of truck fleets has conclusively demonstrated the absolutely unimpaired lubricating value, and the great economy of crankcase oil from which these foreign substances have been completely removed through proper purification.

Skinner Motors, Inc., pioneers in oil purification, have now developed oil purification to a new degree with the Stream-Line Oil Filter! These new Skinners make possible complete purification of crankcase oil for a total cost of 1½c to 4c per gallon! And they are available in several models, ranging in price from $125 on up—making it practical and economical for all fleets of five or more vehicles to reclaim their crankcase oil. This means savings of hundreds of dollars each year for fleet operators!



The Skinner Oil Purifying System removes all non-lubricating contaminants—water, carbonaceous matter, silica, etc., down to particles of 1/250,000 of an inch. It is purely mechanical in its action. Employs no chemicals, thus avoiding all possibility of changing the original structure of the oil. It is positive and automatic in action—is fool-proof—requires minimum attention—and is compact in size.

Now you can eliminate needless motor wear by changing your crankcase oil as often as you like, and *still* cut your oil costs down materially! Fill out the coupon below, and let the Skinner representative in your territory show you how the Stream-Line Oil Filter will remove all impurities from your crankcase drainings, and *save you money.*

MAIL THIS COUPON TODAY

Skinner Motors, Inc., 2225 Dalzelle St., Detroit, Mich.
We want complete details on the new Stream-Line Filter.
☐ Have representative call. ☐ Send complete information.
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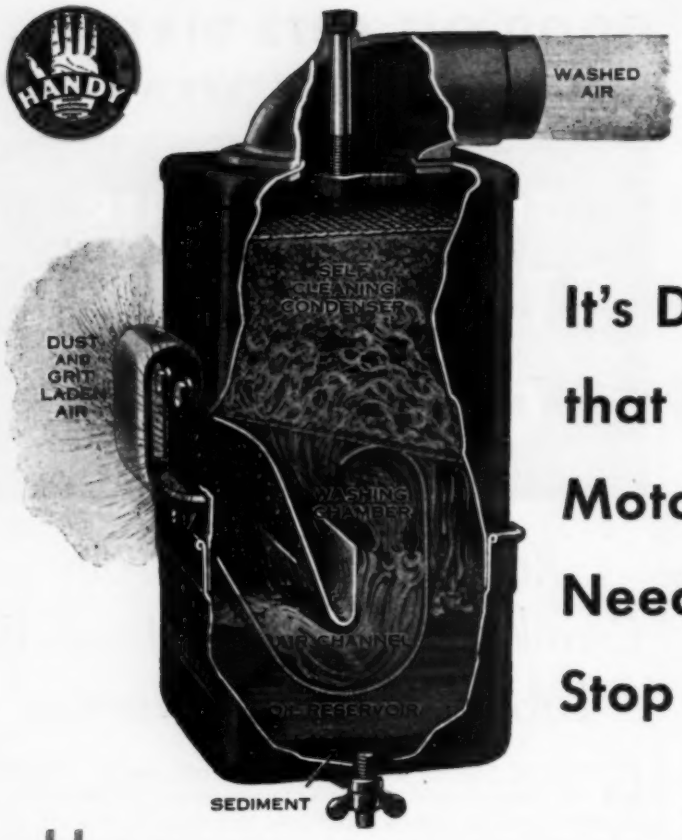

It's Dust that Ruins Motors—Needlessly! Stop It!

HAULAGE everywhere is just beginning to find out the huge, hitherto unsuspected cost of Dust ◆ ◆ It's Dust that ruins motors—calls for complete and repeated overhauls—pyramids your costs ◆ ◆ Stop needlessly ruining fine machinery! Install this self-cleansing, oil-washing Handy Perfection Air Cleaner ◆ ◆ Enjoy the biggest dividends you ever got from any unit of equipment ◆ ◆ No attention needed except to dump one to five pounds of dirt monthly ◆ ◆ Sweepingly guaranteed by Handy, world's largest governor builder ◆ ◆ Three sizes—$7.50 to $25.00 ◆ ◆ Special Ford, Chevrolet, Dodge models ◆ ◆ Ask our distributor or write for catalog ◆ ◆ Today!

HANDY GOVERNOR CORPORATION, DETROIT, MICH.

HANDY PERFECTION AIR CLEANER

Exhaust Gas Tester

THE Cambridge Exhaust Gas Tester, shown here, analyzes the exhaust gases of engines and indicates the results on a scale calibrated in terms of air-fuel ratio over a range of 10 to 15, and a corresponding range of 55% to 100% combustion efficiency.

This information is helpful in arriving at desirable carburetor settings, denotes the completeness of combustion and with proper interpretation, indicates certain mechanical conditions of the engine.

The instrument is furnished in an aluminum case 8" x 12" x 8" with cover; it weighs 29 lbs. Ten feet of rubber hose is supplied for conducting a sample of the gas from the exhaust pipe to the instrument. A stainless steel fitting is provided for insertion into the exhaust.

The instrument operates on the well-known thermal conductivity principle. A novel feature is the moving system of the galvanometer, wherein the complete movement is supported and floats in the field of the magnet, which absorbs shocks. This has the advantage of rendering the instrument usable in a moving vehicle passing over rough roads.

Operation is simple; an instruction plate is fastened to the front. Maintenance is confined to renewing two dry cells and cleaning the filter at infrequent intervals. For further details write to Cambridge Instrument Co., 3732 Grand Central Terminal, New York, N. Y.

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THE MOST MODERN

Back and Seat Cushions for All Types of Truck Equipment

Black Diamond

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have the same tensile strength as structural steel; the alloy used for the roof ribs and rear corner angles is somewhat stronger. Yet the weight is about one-third as much.

A cable is strong without being stiff. Similarly, an aluminum alloy may be strong, yet exhibit a considerable deflection under a load. Consequently, it is customary when building an aluminum body after an existing steel pattern to use a slightly heavier gauge of sheet, to secure comparable rigidity. The result is a body which is 50 per cent lighter, 40 per cent stronger in tension, and equally stiff.

Standard structural shapes, though very useful in most types of construction, are almost totally absent in the corrugated body. The underframe is pressed from sheet aluminum; the corrugations in the side and end panels eliminate side posts; the roof bows are pressed into shape from strips of sheet; the roof is made of sheet; the only structural shapes used are the clip angles and rear corner angles. The body is assembled with rivets throughout.

Because of its aluminum body, the unit weighs only 3,500 lb. empty and 13,500 lb. loaded—a payload of 10,000 lb. A steel bodied unit of the same type and same gross weight would have a capacity of 8,000 lb.

Light weight, of course, is the usual object sought in building a truck body of aluminum. But even in cases where weight is not an important factor, aluminum may be selected for one of its other characteristics, chief among which is its resistance to corrosion.

Since most fleet operators employ a color scheme which is associated with the firm name, it is usually desirable to apply a coat of paint. In that case it will be found that an aluminum body seldom needs repainting, since the surface underneath the paint will remain sound. For this reason maintenance costs are relatively low.

When the operator's money is invested in an aluminum body the entire return is not in the form of cheaper operation per ton mile and lower maintenance costs. The average operator would be content if it was. But part of it— about one-third to one-fourth the original cost of the material—is the salvage value of the scrapped body.

The choice between aluminum and other body materials depends chiefly whether the operator's immediate interest is in low initial outlay or higher first cost with subsequent profit.

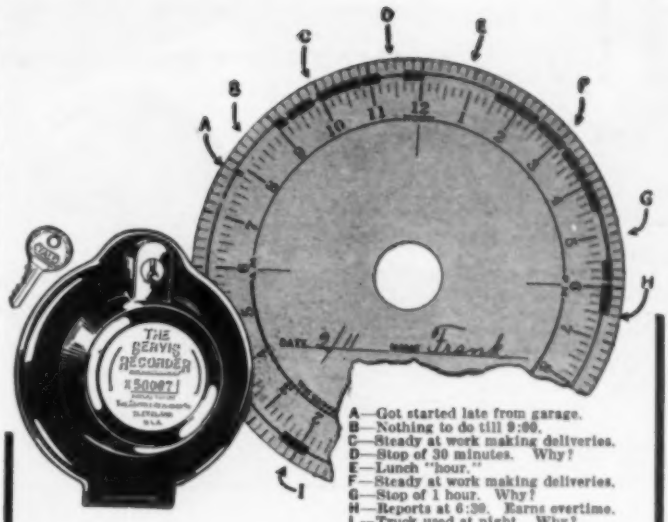
The aluminum truck body is not new. There are hundreds of them in service, increasing payloads anywhere from 10 to 40 per cent, or otherwise paying back their slightly higher first cost. Likewise, there are hundreds of the corrugated type van bodies performing a similar function. To combine the two is simply a logical step.

●

Thompson Employees Get Service Pins

SERVICE pins in bronze, silver and gold, signifying five to twenty-five years of continuous employment, were presented recently to 681 employees in the Detroit and Cleveland plants of Thompson Products, Inc. F. C. Crawford, president, pointed out that the emblems represent an average of nine and one-half years service and collective manufacturing experience of over sixty centuries.

Nine employees with the company over twenty-five years assisted in the presentation ceremonies after receiving gold pins set with diamonds. All who received pins were organized into an "Old Guard Club" which will promote social and welfare activities of the com-


A—Got started late from garage.
B—Nothing to do till 9:00.
C—Steady at work making deliveries.
D—Stop of 30 minutes. Why?
E—Lunch "hour."
F—Steady at work making deliveries.
G—Stop of 1 hour. Why?
H—Reports at 6:30. Earns overtime.
I —Truck used at night. Why?

What's Your Truck Doing All Day?

This Little Device Tells Every Move the Truck Makes

SEE THAT CHART. Those wide heavy marks show just when your motor truck was working, and how long. In between are blank spaces that show idle time. The result is a complete record, in fact, a "picture" of just what your truck did all day and all night. The truck "writes" its own story. Simple, isn't it?

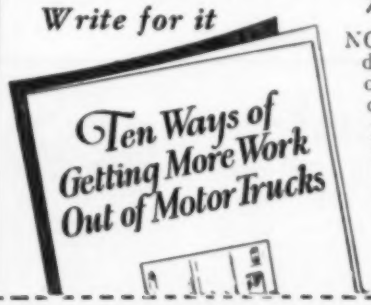
Save $500 Per Truck Per Year

Motor trucks are expensive to operate. The running time of a truck costs from $3.00 to $5.00 an hour! That's why delays, *avoidable* delays, are so costly. Half an hour per day *avoidable* idle time easily costs you $500 per year. It's a big loss. That's why over 100,000 trucks are already *Servis Recorder* equipped.

All You Need Is a Screw Driver

The little *Servis Recorder* that produces this "Busy-Idle" chart is attached to the truck merely by a couple of screws—why, you could even *nail* this *Servis Recorder* on your truck.

Write for it



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NOW you can get a 7 days' busy-idle record on a single chart without changing. When you lock the 7-Day Recorder, you don't have to touch it again for a week! The coupon brings the whole story.

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The Service Recorder Company

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THE SERVIS RECORDER

"Keeps Trucks Busy"

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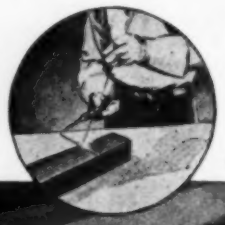
THAT SAVES YOU MONEY

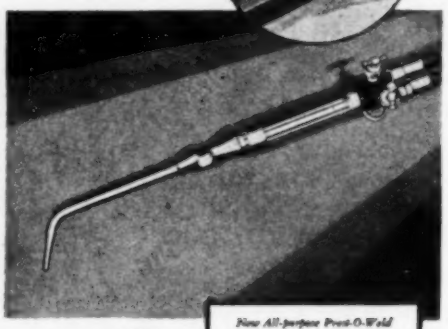


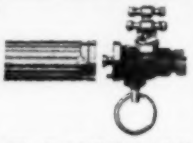
Prest-O-Weld Blowpipe Tips can be bent to the angle most suited to your work.

PREST-O-WELD Type W-105 Welding Blowpipe Tips are made of special seamless copper tubing which can be bent to any angle you require. This feature saves you money because it makes one set of tips suitable for every type of work. Large investments in tips of various angles are unnecessary.

Similar money-saving features are built into all Prest-O-Weld equipment. Manufactured by the largest makers of oxy-acetylene welding and cutting apparatus, Prest-O-Weld Blowpipes combine scientific design with features which make them economical for users who wish to keep their apparatus investment as low as is consistent with good work.

Any Prest-O-Weld jobber will be glad to explain the time- and money-saving features of Prest-O-Weld Blowpipes.





The Prest-O-Weld Detachable Valve Body makes it possible to change blowpipes in ten seconds.

New All-purpose Prest-O-Weld Blowpipe—Type W-105

The new Prest-O-Weld Type W-105 Welding Blowpipe with the Prest-O-Weld Detachable Valve Body is ideal for mill and factory maintenance—for general all-around welding in garages and machine, blacksmith, boiler and sub welding shops—and as a production tool in the manufacture of metal products. An assortment of ten different sizes of tips gives it a wide range of usefulness.

Prest-O-Weld Type W-105 Welding Blowpipe complete with any five tips, lighter and wrench.....$27.00

Prest-O-Weld Type W-105 Welding Blowpipe handle assembly, with tips and accessories as above but without valve body.....$19.00

PRESTOWELD
WELDING AND CUTTING APPARATUS

THE LINDE AIR PRODUCTS COMPANY
Unit of Union Carbide and Carbon Corporation
126 Producing Plants — UCC — 627 Warehouse Stocks
IN CANADA, DOMINION OXYGEN COMPANY, LTD., TORONTO

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Atlanta, Baltimore, Birmingham, Boston, Buffalo, Butte, Chicago, Cleveland, Dallas, Denver, Detroit, El Paso, Houston, Indianapolis, Kansas City, Los Angeles, Memphis, Milwaukee, Minneapolis, New Orleans, New York, Philadelphia, Pioneers, Pittsburgh, Portland, Ore., St. Louis, Salt Lake City, San Francisco, Seattle, Spokane, Tulsa

LINDE OXYGEN — PREST-O-LITE ACETYLENE — OXWELD APPARATUS AND SUPPLIES — UNION CARBIDE

MASTERCRAFT
TRUCK BODIES

Production
and
Custom Built
Body Equipment
Vocationally Designed

LUCE MANUFACTURING CO.
Lansing, Michigan

what's that—

change engine oil every 3,000 miles instead of every 1,000 miles?

Right! GLAZOIL accomplishes just that. Moreover, GLAZOIL reduces replacement parts expense, cuts repair bills, "runs-in" new motors properly, and lengthens life of old motors. The reason is that GLAZOIL keeps all wearing surfaces constantly "wet" with lubrication. GLAZOIL won't burn—won't freeze—won't break down. Find out the full facts for yourself. Write us today. The Glazoil Products Co.—1614 Coutant Avenue—Cleveland, Ohio.

Glazoil
COLLOIDAL GRAPHITE

PREVENTS FRICTION — REDUCES WEAR

CONVINCE YOURSELF
ORDER A TRIAL CAN

pany. E. C. Prahst, a foreman at the Thompson Products main plant in Cleveland, is the oldest employee in point of continuous service. He has worked for the firm thirty-three years.

●

White Announces Models 707 and 712

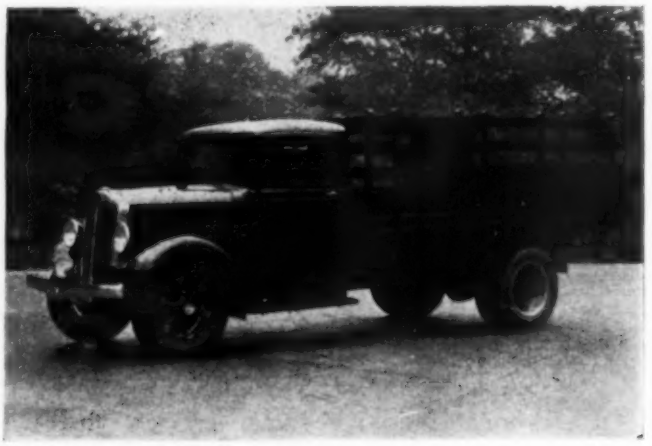
TWO new trucks are announced this month by The White Company, Cleveland, Ohio, known as Models 707 and 712.

The new White Model 707, of 15,000 lbs. gross capacity, following the successful introduction of the White Model 702, is an entirely new chassis, with the exception of power-plant and transmission which have been retained.

The same important features of appearance have been utilized, this model carrying the new lines characteristic of the 702 Model. The K-type construction, which was introduced by White some years ago, is also used in the Model 707. Performance is attested to, by an overall reduction of 46 to 1, which combination makes possible, with a full load, a gross grade ability of 27.6 and a gross ability in direct gear of 4.6. Road speeds possible with the various rear axle ratios range from 36 m.p.h. to 50 m.p.h.

A new, White-designed, full-floating rear axle, similar in general characteristics to that of the 702, but of larger dimensions, is incorporated in this model. It is of the banjo type, with one-piece cast housing. The center is a single-reduction spiral-bevel gear assembly with chrome-nickel, heat-treated gears. Brakes, springs and other chassis details are of the customary White design, somewhat heavier than the Model 702, to take care of the larger capacity.

The new White Model 712, with a gross rating of 17,000 lbs., and a nominal tonnage rating of 2½ to 3½ tons, will fit in nicely in a variety of truck operations. It is furnished with a large range of wheelbases, from 130 to 190 inches, making possible the use of bodies as long as 15 feet.



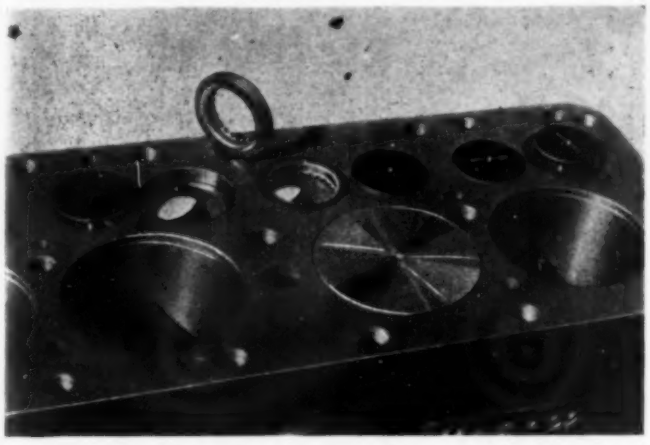
These attractive lines are characteristic of all of the new White models in the "700" Series. They first appeared on the 701 and 702 types last Fall.

The load distribution, which is in line with the "K" models produced by this company, is claimed to approximate the ideal, insuring low tire costs, due to the prevention of too much weight at the rear and not enough at the front. This feature is also said to make possible a shorter wheelbase, shorter overall length and better turning radius.

Appearance of this truck is characteristic of the new Whites, being somewhat similar to the illustration ac-

companying this article, which is a picture of the Model 702.

With standard 5-speed transmission and the 6.38 rear axle ratio, which give a speed of 41 m.p.h., the gross grade ability in direct gear is over 4.5, and the gross grade ability in the first gear is approximately 32.5. With this transmission, and the range of ratios available, the road speed combinations range from 41 to 51.3, and with the optional over-drive transmission, the range of road speeds using the over-drive, run from 47 to 67.2 m.p.h. This performance is secured at the governed speed of 2,400 r.p.m.



All White engines are now equipped with screwed-in, Stellited exhaust valve seats, for which unusually long life is claimed.

The engine, designated as White Model 9-A, is entirely new, having a bore and stroke of 3-25/32 x 4½ inches. It is a 6-cylinder job of L-head construction. Engines of both models described here use the White type, screwed-in, inserted exhaust valve seats. Further details covering these new models, which are of typical White design, may be obtained directly from The White Company, Cleveland, Ohio. You'll mention FLEET OWNER when writing, won't you?

●

An Interesting Coast Trucking Operation

ONE of the most comprehensive motor truck systems in the west, is now operated by the Highway Express and Forwarding Company, as described by Willard E. Mullikin, general manager of the organization.

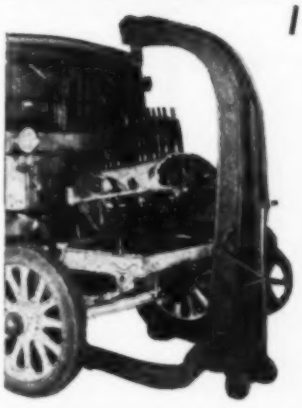
This company, which holds a certificate issued under the authority of the California Railroad Commission, operates under contract with ten franchise lines in the State of California, serving 512 towns. With such a service afforded to shippers, it is now possible to ship goods to nearly every point in the state under the control of the one central organization. By dealing with the central company, shippers are relieved of all responsibility with regard to connecting lines, where freight of necessity must be carried by one or more truck lines, and as each company is covered by insurance and have filed C. O. D. bonds with the Los Angeles Board of Public Utilities, the shipper is protected from point of origin to final destination.

Approximately 50 pieces of equipment run on daily schedule from 7:30 A. M. to 6:00 P. M., serving all connecting lines; freight is picked up at customer's door and carried to the central terminal at 1201 East Fifth Street, or delivered direct to connecting line terminal as may be most expeditious. From there it is forwarded to destination under the one bill of lading, with the least possible delay. Under this plan econ-

PLYWOOD HASKELITE PLYMETL
FOR BETTER BODIES!
use PLYMETL
"LIGHTEST and STRONGEST" PANELING
HASKELITE MANUFACTURING CORPORATION
208 W. WASHINGTON ST., CHICAGO

DEMOUNTABLE TRUCK BODIES
WRITE FOR INFORMATION
ROLOFF, INC.
KENDALL SQUARE
BOSTON—MASS.

SPONGEX
(Sponge Rubber)
Honeycomb Seat Cushions
Never "Bump"
Send for booklet "A New Way to Ride on Rubber." It tells why.
THE SPONGE RUBBER PRODUCTS CO.
Derby, Connecticut


IT IS FAR MORE ECONOMICAL....
to have in your maintenance department a well built, heavy duty crane which can be used FOR ALL PURPOSES, than to buy a small cheap one that can be used for small work only. This has been proved in hundreds of plants equipped with Canton Portable Cranes. Being mounted on small sturdy wheels, these cranes are easily taken to the job wherever it may be. It pays for itself quickly. Write for full details.
THE CANTON FOUNDRY & MACHINE CO.
CANTON, OHIO
New York Office—Room 704
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BOX-MATTRESSED BEDS AS COMFORTABLE

As Your Own

THEY'RE so soft and thick and downy — these Shelby beds. And 100 of them are 8 feet in length — for tall people. All of Hotel Fort Shelby's 900 rooms and suites have circulating ice water — private bath and tip-eliminating servidors. Rooms $2 to $10. Suites $6 to $25.

Three popular priced restaurants. Garage. Lobby Shops. A location in the heart of Detroit — near everything.

HOTEL Fort Shelby

MAYNARD D. SMITH
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"AGLOW WITH FRIENDLINESS"

In **BOSTON...**

Stay at the **KENMORE**

400 *Rooms with Bath*

- Modern, comfortable . . . convenient to shopping, business, the theatres. Ample parking space.
- Outside rooms, each with tub-shower and circulating ice water.
- Excellent food, moderately priced, in the Empire Room and English Grill Room and Bar.

Write for Booklet *"Historical Boston"*

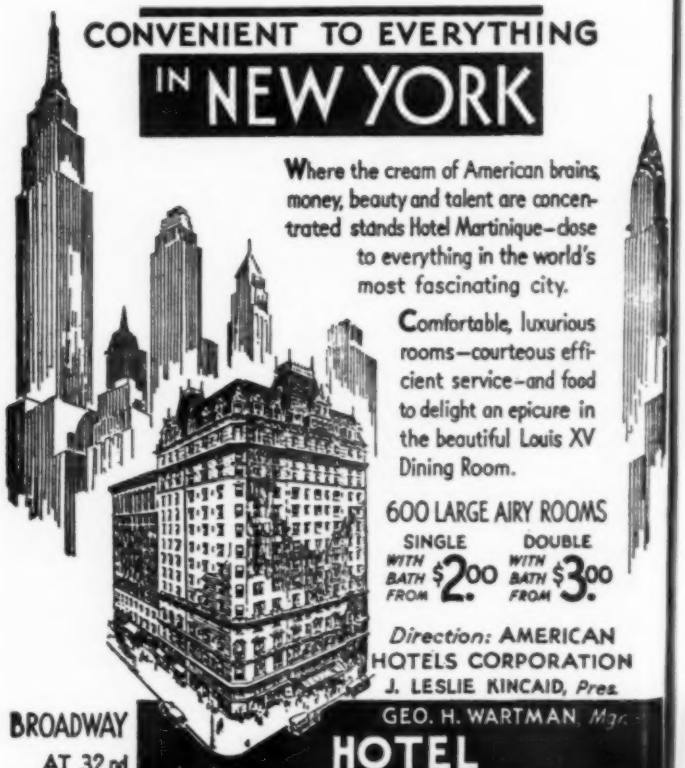
from $3

At Kenmore Subway. All U. S. Routes lead to the Kenmore.

HOTEL KENMORE

Commonwealth Ave. at Kenmore Sq.
COLYAR P. DODSON, Manager
One of Boston's Newest and Finest Hotels

CONVENIENT TO EVERYTHING IN NEW YORK



Where the cream of American brains, money, beauty and talent are concentrated stands Hotel Martinique—close to everything in the world's most fascinating city.

Comfortable, luxurious rooms—courteous efficient service—and food to delight an epicure in the beautiful Louis XV Dining Room.

600 LARGE AIRY ROOMS

SINGLE WITH BATH FROM $2.00 DOUBLE WITH BATH FROM $3.00

Direction: AMERICAN HOTELS CORPORATION
J. LESLIE KINCAID, *Pres.*

BROADWAY AT 32nd AND 33rd STREETS

GEO. H. WARTMAN, *Mgr.*

HOTEL MARTINIQUE

omies are effected, which serve to the interest of both shipper and operator.

On an average, this truck fleet covers some 4000 miles daily with both long and short hauls. Only comparatively a few years ago, the average fleet consisted of some two or three trucks. True enough, in those days little else was expected or asked of by the shipper. Soon, however, various operators found it more advantageous to group together under a central organization as offered by the Highway Express and Forwarding Company, and therein lies the beginning of a myriad of services now offered to the shipper, in addition to greater efficiency as a safe positive medium of control.

A salent point in the rapid strides made in the evolution of control is the fact that those in charge of this development work actively and earnestly for the benefit of the shipper and the advancement of the truck operator. With such a background it is easy to understand why this system has developed to its present high degree of efficiency and economy.

●

A World Without Advertising?

Prepared by the Bureau of Research and Education, Advertising Federation of America

PROBABLY few people have stopped to think seriously what advertising really has done for us and to imagine how things would be if there were no advertising in this world. What is it good for, anyway? Some consider it somewhat of a nuisance, cluttering up radio broadcasts, newspapers, magazines, roadsides, and even the U. S. mails. A few individuals profess to believe that we would be better off without advertising.

It is interesting to speculate on what would happen if all advertising were discontinued. The question is not a useless one to think about, for advertising is so very important a factor in our daily lives that everyone ought to know something about what it does for us besides furnishing free jazz music and pictures of pretty girls.

If advertising were to be abolished, it is easy to see that radio, magazines, and newspapers would have to be financed in some other way, for they are now supported mainly by advertising revenue. Radio listeners would have to pay a heavy license fee as they do in some foreign countries and broadcasts would be under the control of politicians. Readers of publications would have to pay at least five times the present price for very inferior news sheets and periodicals.

But all this is merely incidental, compared with the deeper sacrifices which would result if we tried to get along without advertising.

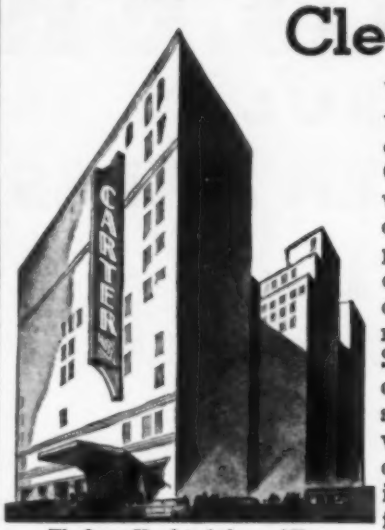
It is not hard to picture what would happen to the mass production industries if they could not use advertising to do their mass selling. Automobile manufacturers, for example, would sell far less cars and their unit costs would rise so high that many people who now own cars could not afford to buy them. The same is true of a hundred other common articles which are now produced cheaply because advertising guides consumer purchases toward such products as can benefit from large scale manufacture.

The food in grocery stores would be quite different if it could not be advertised. Critics love to point out accusingly that the human stomach has only a fixed capacity and advertising could not, or should not, increase the consumption of food. That is undeniably true, so far as pounds or calories are concerned, but how about quality and attractiveness? Advertising furnishes the incentive for food manufacturers to vie with one another in offering ever better and tastier food preparations. That kind of competition would largely cease if all food were sold only on labelled specifications of size, weight, composition, and what-not.

Without advertising, all new inventions would be made known only through news reports read by few. No one would describe what a newly developed article can mean to its possessor in terms of human emotions and aspirations. Infant industries would be robbed of the means to expand quickly and most of them would die. Chronic unemployment would become a permanent problem.

If business should suddenly forget how to advertise, industrial progress would have to stop and our standards of living would immediately begin to settle down to much lower levels. Without advertising this world would become a dreary morgue.

When You Come to Cleveland



When next you visit Cleveland come to the New Carter Hotel. A warm welcome awaits you—prompt, courteous service and delicious food at reasonable prices. Six hundred large, comfortable outside rooms each with private bath and circulating ice water. Exceptional facilities for conventions and sales meetings. Personalized management.

The Carter Hotel, in the heart of Cleveland is conveniently located close to leading department stores, theatres, banks and transportation terminals.

Room Rates Begin at $2.50

The CARTER HOTEL
PROSPECT NEAR EAST NINTH
CLEVELAND, OHIO
WILLIAM T. CRUSE, Manager

Value When You Go To PHILADELPHIA

600 ROOMS BATHS

A ROOM and A BATH For TWO and A HALF

$2.50 SINGLE WITH BATH $4.00 DOUBLE WITH BATH

HOTEL PENNSYLVANIA
39th AND CHESTNUT STS., PHILADELPHIA

SHULER
TUBULAR
TRAILER AXLES

Are made from a

ONE-PIECE SEAMLESS TUBE and HEAT TREATED.

The spring seat castings with brake mounting flange cast integral are pressed on the tube by a mechanical process, thus maintaining the heat treated metallic structure of the virgin metal.

NO HIGH WELDING TEMPERATURES TO CAUSE METAL FUSION ARE EMPLOYED.

SHULER AXLE COMPANY, Inc.

W. E. Dugan, President and General Manager

Louisville, Kentucky

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THE BIGGEST THING

to be said about

ANY Valve Seat Grinder!

HALL *ECCENTRIC* VALVE SEAT GRINDER ADOPTED BY.....

ALLIS-CHALMERS, AUTOCAR, BRIGGS-STRATTON, DE SOTO, CHRYSLER, CONTINENTAL, CURTISS-WRIGHT, FORD, G. M. C. TRUCK, HUG TRUCK, INTERNATIONAL TRUCK, [illegible]L-SCOTT, LINCOLN, MASSEY-HARRIS, PLYMOUTH, [illegible] ROLLS-ROYCE, STUDEBAKER, WHITE TRUCK, [illegible] OVERLAND, DAIMLER-BENZ, (Germany) [illegible]DEN, (France) LEYLAND, (England) RENAULT, (France)

HALL E-S Valve Seat Grinder

Its adoption by 24 leading car, truck, tractor and marine motor manufacturers, says more for *ECCENTRIC* valve seat grinding than can be said about any other valve seat servicing method.

When you buy a Grinder, just remember that the *ECCENTRIC* is the ONLY valve seat grinding method universally adopted by factory service engineers and production experts. If your Jobber can't tell you why, write the factory and complete information will be sent you by return mail.

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1620 Woodland Ave. Toledo, Ohio, U. S. A.

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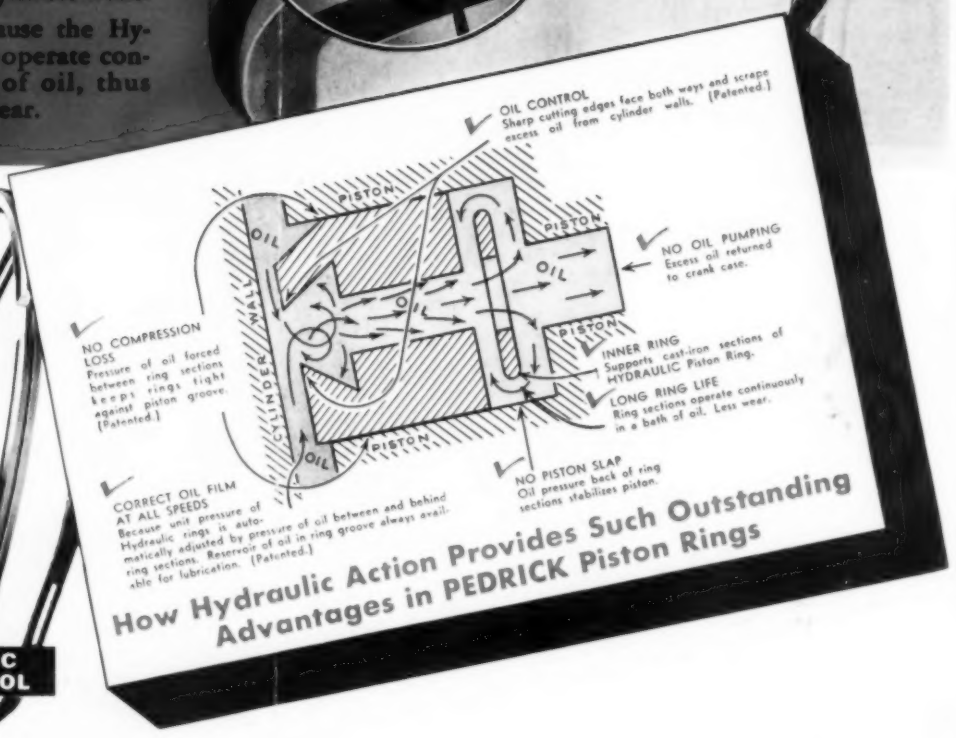
HALL *ECCENTRIC* Valve Seat Grinder

HYDRAULIC ACTION

. . . three of numerous definite advantages:

1. Maintains the correct oil film at all speeds because the unit pressure of the Hydraulic Rings is automatically adjusted by the pressure of the oil between and behind the ring sections.
2. Restores new-car efficiency without renewing the pistons or refinishing the cylinders because the ring sections are packed tightly by Hydraulic Action in the worn piston groove and against the worn cylinder walls.
3. Assures long life because the Hydraulic Ring sections operate continuously in a bath of oil, thus materially reducing wear.


OIL CONTROL
Sharp cutting edges face both ways and scrape excess oil from cylinder walls. (Patented.)
PISTON
OIL
CYLINDER WALL
NO OIL PUMPING
Excess oil returned to crank case.
NO COMPRESSION LOSS
Pressure of oil forced between ring sections keeps rings tight against piston groove. (Patented.)
INNER RING
Supports cast-iron sections of HYDRAULIC Piston Ring.
LONG RING LIFE
Ring sections operate continuously in a bath of oil. Less wear.
CORRECT OIL FILM AT ALL SPEEDS
Because unit pressure of Hydraulic rings is automatically adjusted by pressure of oil between and behind ring sections. Reservoir of oil in ring groove always available for lubrication. (Patented.)
NO PISTON SLAP
Oil pressure back of ring sections stabilizes piston.
How Hydraulic Action Provides Such Outstanding Advantages in PEDRICK Piston Rings

Let Hydraulic Action cut *your* maintenance expense. The benefits of this new principle of motor reconditioning are fully explained in the S.A.E. booklet entitled "Hydraulic Action in Piston Ring Design." Write for your copy!

Pedrick
HEAT-SHAPED
PISTON RINGS

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